

## SOCIETY AFFAIRS

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## Items of Interest\*

## Co-Operate with the Employment Service

The active co-operation of members of the Founder Societies, particularly those who are employers of engineers, is necessary in order to make the Employment Service a complete success.

On September 1, 1923, a co-operative plan was started whereby the Service became available only to members of the Founder Societies, nominal contributions being requested from those who obtain positions through the Service. The present plans contemplate placing branch offices in Middle West and Pacific Coast centers as soon as the income of the Service warrants. A more personal contact is also being developed between the Service and those dealing with it.

However, the goal to be attained, that of being able to place an engineer in the position he desires and for which he is best fitted and also of furnishing an employer with just the man he is seeking, will not be realized until members of the profession co-operate fully with the Service.

Members of the Society, especially those who employ engineers, are requested to give the Service the opportunity of filling their needs.

Some of the benefits from a highly developed service to employers are: (a) Availability of engineers who have gained standing sufficient to become members of the National Societies will be obtained; (b) opportunities for expert counsel on positions requiring men of special qualifications; and (c) ease in filling positions. The results of the first four months of operation of the Service under the new plan, described in October, 1923, *Proceedings*, is an

\* Members are urged to contribute items of general interest.

encouragement to those who have faith in its ultimate success. Your earnest support, suggestions, and criticisms are invited, in order that the Service may be steadily improved and increased in scope.

### **Elihu Thomson to Receive Kelvin Medal**

International recognition has been given an eminent American engineer in the recent choice of Elihu Thomson to receive the Kelvin Medal for 1923.

This medal is given only to those who have attained high eminence as engineers or investigators in the fields of scientific advancement or research as exemplified by the late Lord Kelvin who for more than fifty years held the Chair of Natural Philosophy at the University of Glasgow. His career was marked by a variety and magnitude of effort ranging from the direction of important work connected with the laying of the transatlantic cables by the *Great Eastern* in 1865, to the presidency of a commission to study the problem of utilizing the power at Niagara Falls in more recent years. Among other achievements, he invented a compass, still largely used, several tidal gauges and instruments, a galvanometer, a siphon recorder for use in submarine telegraphy, several electrometers, and, later, ampere and watt balances. These, together with his mathematic investigations and writings, marked him as one of the most accomplished scientists of a brilliant generation.

With such a background the Kelvin Medal assumes added significance. It is awarded triennially, the only previous instance being in 1920. Selection is made from nominees of appropriate organizations, the Board of Award consisting of the Presidents of numerous British scientific societies representing civil, mechanical, electrical, naval, mining, shipbuilding, and steel industrial engineers. The four Founder Societies united in the nomination of Dr. Thomson. The concurrence of the Committee in the choice of the representative American societies is, therefore, a compliment and a recognition alike to American engineers and to a worthy member of the profession.

It is significant that Elihu Thomson was born in Manchester, England, of Scotch and English parentage. Following his collegiate education in the Central High School of Philadelphia, Pa., he was Professor there for ten years, until 1880, since which date he has been actively connected with the electrical and manufacturing industry, as an official of the Thomson-Houston Electric Company, later merging with the General Electric Company, and other organizations. Researches in arc lighting and electrical welding gave him wide prominence. Literally hundreds of inventions are credited to him. In 1920-21, he was Acting President of the Massachusetts Institute of Technology. His accomplishments have received recognition in the form of many honorary degrees, prizes, medals, and society memberships. The bestowal of the Kelvin Medal which is scheduled to take place during the summer of 1924 thus adds new lustre to an already brilliant record.

### **Interest Shown in Secretary's Visits**

Since the early fall Secretary Dunlap's time has been much occupied in visits to Local Sections, and in preparing for and attending Society or Section

meetings. The following, taken from his notes covering some of these activities, exhibits a wide and gratifying interest on the part of members in Society affairs.

#### NOTES ON SECRETARY'S VISITS, FALL OF 1923

##### *Monday, October 22, Atlanta, Ga.:*

Luncheon meeting with 36 present. In addition to describing some of the newer activities of the Society, plans for the Spring Meeting to be held in Atlanta in April, 1924, were discussed. In the evening, the Student Chapter at the Georgia Institute of Technology was addressed, about 100 members of the Chapter and other interested students being present. President Brittain presided.

##### *Tuesday, October 23, Chapel Hill, N. C.:*

Attended a dinner at the home of Dean Gustave M. Braune at which President Chase of the University of North Carolina and several members of the Society were guests. In the evening addressed the Student Chapter of the University of North Carolina. About 130 students were in attendance. Following the Secretary's address, President Chase addressed the students.

##### *Wednesday, October 24, Durham, N. C.:*

Attended and addressed an organization meeting of the new North Carolina Section. 16 present. In the evening addressed the Student Chapter at the State College at Raleigh, N. C., 30 students being present.

##### *Thursday, October 25, Baltimore, Md.:*

Addressed a dinner meeting of the Baltimore Section, 19 being present.

##### *Tuesday, October 30, Ann Arbor, Mich.:*

Addressed a luncheon meeting of 51 students, faculty members, and practicing engineers. It is interesting to note that 23 of the 25 members of the Student Chapter were present at the luncheon. In the evening addressed the Detroit Section, 22 being present, including Director George H. Fenkell. The program of the Fall Meeting to be held in 1924 at Detroit was discussed.

##### *Wednesday, October 31, Indianapolis, Ind.:*

Addressed a luncheon meeting of 11 members interested in completing the organization of the Indiana Section, authorization for which had been granted by the Board, January 16, 1923.

##### *Thursday, November 1, Kansas City, Mo.:*

Addressed a dinner meeting of the Kansas City Section, 30 being present.

##### *Friday, November 2, Manhattan, Kans.—Afternoon:*

Addressed 700 engineering students at the State College.

##### *Friday, November 2, Topeka, Kans.—Evening:*

Addressed a dinner meeting of the Kansas Section, 23 being present, including several members of the Student Chapter at the University of Kansas, Lawrence, Kans.

##### *Saturday, November 3, Lawrence, Kans.:*

Addressed a group of 25 Senior Civil Engineering students at the University of Kansas, Lawrence, Kans.

##### *Sunday, November 4, Lincoln, Nebr.:*

Spent the day in the home of Director Frank T. Darrow, Lincoln, Nebr. In the afternoon, Mrs. Darrow served tea to several of our Lincoln members.

*Monday, November 5, Omaha, Nebr.:*

Addressed a dinner meeting attended by about 60 engineers representing all branches of the profession, including the members of the Nebraska Section. Other speakers, including Director Darrow, contributed to the program which had as its object the formulation of plans for a comprehensive organization of engineers in Omaha.

*Tuesday, November 6, Denver, Colo.:*

Addressed a dinner meeting of the Denver Section, 40 being present. Several other speakers added to the interest of the evening.

*Thursday, November 8, Salt Lake City, Utah:*

Addressed the dinner meeting of the Utah Section, 20 being present. The program of the Summer Meeting to be held in Salt Lake City was discussed.

*Saturday, November 10, Los Angeles, Calif.:*

Addressed a dinner meeting of the Los Angeles Section, about 60 being present. In the afternoon, following a luncheon with some of the members, a visit was paid to Director George G. Anderson at Pasadena. Director Anderson had apparently succeeded in returning to Pasadena from the Richmond meeting without over-exertion in spite of the precarious condition of his health. He expressed himself as being hopeful that the cause of his illness had been found. During the day in Los Angeles much time was given to discussion of the Summer Convention to be held in Pasadena, in June, 1924.

*Sunday, November 11, San Diego, Calif.:*

Addressed a dinner meeting of the San Diego Section, 14 being present.

*Tuesday, November 13, Sacramento, Calif.:*

Addressed a dinner meeting of the Sacramento Section, 24 being present. Vice-President Grunsky and Director Huber were present and addressed the Section.

*Wednesday, November 14, San Francisco, Calif.:*

Addressed a dinner meeting of the San Francisco Section, about 90 being present. Addresses were also given by Past-President Marx, Vice-President Grunsky, Director Huber, M. M. O'Shaughnessy, Professor Hyde and representatives from the Student Chapters at Leland Stanford Jr. University and the University of California. Several students were present from the Student Chapters at Leland Stanford Jr. University and the University of California.

*Friday, November 16, Portland, Ore.:*

Addressed a dinner meeting, about 35 being present, including Director Mason.

*Saturday, November 17, Seattle, Wash.:*

Addressed a luncheon meeting of the Seattle Section, about 35 being present, and in the evening spoke briefly at a Smoker of the Seattle Engineers Club, about 50 being present.

*Monday, November 19, Spokane, Wash.:*

Addressed a luncheon meeting of the Associated Engineers of Spokane, 66 being present. Vice-President Plum, of the American Institute of Electrical Engineers, was also present and addressed the luncheon. In the evening addressed a dinner meeting of the Spokane Section, 39 being present. Several distinguished citizens of Spokane were present and addressed the Section, including Mayor Fleming, former U. S. Senator Turner, a representative from the clergy, one from the bankers, etc.



*Thursday, November 22, Duluth, Minn.:*

Addressed a dinner meeting of the Duluth Section, about 39 being present.

*Friday, November 23, St. Paul Minn.-Minneapolis, Minn.:*

Addressed in the morning a meeting of the Student Chapter of the University of Minnesota attended by about 150 of the 160 members of the Chapter. In the evening addressed a dinner meeting of the Northwestern Section, about 30 being present.

*Saturday, November 24, Milwaukee, Wis.:*

Addressed a dinner meeting of the new Milwaukee Section. Both President Loweth and Director Condron were present and addressed the Section.

*Monday, November 26, Chicago, Ill.:*

Addressed briefly a luncheon meeting of the Committee on Public Affairs of the Western Society of Engineers, about 50 being present, including Past-President Onward Bates. In the evening addressed a dinner meeting of the Illinois Section, about 31 being present. Past-President Talbot and Director Condron were also present and addressed the meeting.

*Tuesday, November 27, Des Moines, Iowa:*

President Loweth joined the Secretary in Des Moines and each spoke three times during the day: At noon at a Business Men's Luncheon Club; in the afternoon at the Annual Meeting of the Iowa Section, about 50 being present; and again in the evening at a dinner given by the Des Moines Engineers Club in honor of the visiting members of the Iowa Section, about 60 being present. Vice-President Marston was present and spoke at both the afternoon and the evening meetings.

*Wednesday, November 28, St. Louis, Mo.:*

President Loweth accompanied the Secretary to St. Louis where both addressed a dinner meeting of the St. Louis Section. About 29 were present including Director Brown. At noon, Past-President Ockerson gave a luncheon in honor of the visiting officers of the Society.

*Monday, December 3, Syracuse, N. Y.:*

Addressed a luncheon meeting of the Student Chapter at Syracuse University, about 70 students being present, and a dinner meeting of the Syracuse Section, about 31 being present, following which the Secretary gave one of the regular lectures before the Technology Club of Syracuse, under the auspices of the Syracuse Section, about 100 being present. Director Holmes made arrangements for the day.

*Friday, December 7, Bethlehem, Pa.:*

Addressed the Annual Meeting of the Lehigh Valley Section, about 27 being present.

*Tuesday, December 11, Washington, D. C.:*

President Loweth and the Secretary addressed the Annual Meeting of the District of Columbia Section, about 75 being present.

In addition to the Section meetings noted, many luncheons were given in honor of the Secretary, who has been able in this way, and by means of calls on members in the cities visited, to make many valuable contacts.

### Public Works Conference

A Public Works Conference was held January 9, 1924, in Washington, D. C., under the auspices of the Federated American Engineering Societies. Representatives of about 60 engineering, architectural, and allied organizations were

present. The Society was represented by President Charles F. Loweth, Vice-President C. E. Grunsky, Secretary John H. Dunlap, and Messrs. Charles H. Paul and F. C. Wight. Mr. Philip N. Moore, Mem. A. I. M. E., was elected Chairman of the Conference.

At the morning session, addresses were made by W. F. Willoughby, Director, Institute for Government Research, Harold F. Graves, Assistant Chief, Bureau of Efficiency, and Herbert Hoover, M. Am. Soc. C. E., Secretary of Commerce.

At the afternoon session, a Committee on Resolutions was appointed, consisting of Messrs. Gardner S. Williams, C. E. Grunsky, Charles F. Loweth, Members, Am. Soc. C. E., Milton B. Medery, Jr., M. A. I. Arch., and Otto F. Mallery, American Association for Labor Advancement. The Committee prepared the following resolution which was unanimously adopted:

*"Whereas, the present structure of the Federal departments represents the unpruned growth of many years and is imperfectly adapted to present needs; and*

*"Whereas, definite recommendations have been made by both President Harding and President Coolidge emphasizing the need of a re-organization of public business, and a plan of general re-organization of departments is under consideration by a joint committee of Congress; and*

*"Whereas, the engineers and architects, and related technical professions of the country have for many years advocated the establishment of a National Department of Public Works in which the matters relating to public works might be administered and co-ordinated; and*

*"Whereas, the consideration of recent bills for the creation of a Department of Public Works was suspended in the interest of a general re-organization; and*

*"Whereas, this subject has received the careful consideration of this conference representing more than sixty engineering and architectural and related organizations from all sections of the country; and*

*"Whereas, the establishment of a Department of Public Works would make it possible to place governmental engineering, and architecture on planes reflecting the highest achievements in these professions, known to the world; and*

*"Whereas, a co-ordinated functioning of all public works agencies would be able to stabilize business and employment by expanding public work when private industry and employment may be slack, and by reducing such work as far as practicable when private industry may be fully absorbing the available supply of men and materials; and*

*"Whereas, the advance and co-ordinated planning of public works is sound economy in that it permits the Government to execute less work at peak prices and more work at the lower prices prevailing during dull times; be it therefore*

*"Resolved: That this Conference of engineers and architects, and allied interests, heartily approves the movement for a re-organization of Federal Departments, and it particularly endorses grouping and co-ordinating within an existing department, preferably re-named a Department of Public Works, the construction and administration of all non-military public works."*

A committee was then appointed to present the resolution to the Congressional Joint Committee on Government Re-organization.

The decision was reached to use the facilities of the Federated American Engineering Societies in conducting any campaign that may prove to be necessary. The representatives of the Society, which is not a member of the

F. A. E. S., expressed a desire to work shoulder to shoulder with the latter in this enterprise, probably through a co-operating committee.

### Surveys of the Grand Canyon

The recent successful completion of a trip through the Grand Canyon of the Colorado by a survey party from the U. S. Geological Survey, after grave fears of disaster, due to floods in the treacherous rapids, recalls a former attempt in which the conclusion was not so happy. Col. C. H. Birdseye, M. Am. Soc. C. E., Chief Topographical Engineer, U. S. Geological Survey, headed the latest expedition and William H. Bush, M. Am. Soc. C. E., is authority for information regarding his experience more than thirty years ago with this treacherous stream.

A party of fourteen men was organized in the spring of 1889 to make a survey for a proposed railroad. After progressing 200 miles through the Canyon, it was found that the equipment had been reduced to only two boats out of the original six and little else. Mr. Bush relates his experiences, reported in the *St. Louis Post-Dispatch* as follows:

"We abandoned the idea of surveying the canyon for but one thing, a place to get out. With the canyon walls climbing 6 000 ft. above us and the waters carrying us forward at tremendous speed, there was little chance of doing anything but keep alive.

"Every minute we figured was our last. We shot over rapids expecting momentarily to be overturned, and passed whirlpools which towered 20 ft. above our heads. We had heard stories about a 60-ft. waterfall and at each bend we expected to turn and see it ahead. But it never appeared.

"It was late in July when we found a place to land, Lees Ferry, where the Mormons crossed. We dragged the boat ashore and threw ourselves on the sand to sleep.

"I learned later that the eight others had passed Lees Ferry and that Banker Brown and three others had drowned when the boat capsized. The five men with me were all alive, but when we awoke on the sand at Lees Ferry the next morning one of them was raving mad.

"All we had left was the clothing on our backs, no water and no food. In a bag around my neck I carried a teaspoonful of flake gold which I had taken from a stream which poured into the canyon, and a five dollar bill. For seven days we tramped across the desert without food, constantly guarding the maniac, until almost dead, we literally crawled into the frontier town of Flagstaff, Ariz."

The only item of the original list of instruments not lost, was an expensive level which Mr. Bush cached in a cleft, hoping to recover it later. For obvious reasons, he is perfectly willing that any other enterprising engineer should assume ownership of this property if it is found.

### Scope of Earthquake Investigations

The Special Committee of the Society studying the effects of earthquakes is making notable progress. It will be recalled that this body was organized shortly after the great Japanese catastrophe, which impressed engineers with the urgency of conducting technical investigations in the hope of minimizing the losses by intelligent precautions with future structures.

A preliminary program for the guidance of those co-operating, has been drawn up by the San Francisco members of the Committee, as follows:

"PROGRAM FOR THE WORK OF THE COMMITTEE ON  
EFFECTS OF EARTHQUAKES ON ENGINEERING STRUCTURES,  
WITH SPECIAL REFERENCE TO  
THE JAPANESE EARTHQUAKE OF SEPTEMBER 1, 1923.

"The following program for a report on the Effects of Earthquakes on Engineering Structures has been prepared by the Committee in San Francisco. Members of the Society and others who may be interested in the subject are invited to send in photographs, data, and discussions of any earthquakes of which they may have knowledge. Discussions should conform to the program, as far as possible, as contributed manuscript will be used in formulating the final report of the Committee in general accordance with the plan.

"SECTION 1.—DEFINITIONS

"It seems desirable to define certain terms included in the title of the subject under review, especially relating to damage, in order that different writers may have the same point of view.

"The effect of an earthquake upon an engineering structure can be designated in three general ways:

"(1).—*Immediate Complete Destruction*.—This defines the damage to a structure that amounts to destruction at the moment of an earthquake, such as the fall of a building with loss of life, the breaking of a dam with release of the water or the destruction of a bridge.

"(2).—*Delayed Complete Destruction*.—This defines the damage to a structure by an earthquake or some correlated effect of the earthquake, such as a fire. It does not necessarily represent a collapse at the moment of the earthquake but defines the destruction that while permitting the structure to stand for a time, requires it to be dismantled and removed at a later date. This destruction would be represented by a ruptured bridge pier that still supported the span, or by some form of fire proofing that protected a structural member but which was later removed.

"(3).—*Partial Destruction*.—This defines the damage to a structure where one part is destroyed and another remains intact, or where a material is destroyed as to its place but remaining in a form to be re-used. An instance of the former would be the brick wall of a steel frame building where the steel frame remains intact, but the wall is ruptured so that rebuilding is required; of the latter, the brick in the wall may be used a second time although the wall be destroyed.

"It is recognized that these definitions will not apply to every case. The general idea sought to be conveyed is that where the damage requires the structure to be rebuilt, in which case, the destruction is complete although it (the structure) may be left standing after the earthquake.

"SECTION 2.—GENERAL

"(a).—The general nature, cause and characteristics of earthquakes, tectonic, and volcanic. Discussion of frequency, intensity and physical characteristics.

"(b).—Description of important earthquakes, especially those where damage to engineering structures has been reported by engineers.

"(c).—The Japanese earthquake of 1923:

"(1) Position; (2) Extent and duration; (3) Physical characteristics, such as earth movements, slips, waves, cracks, and other evidences of disturbance; (4) The geological struc-



ture of Japan and surrounding territory. General description of the land; (5) The nature and cause of this earthquake; (6) The earthquake as compared with other recent earthquakes in magnitude and intensity when measured by instruments; (7) A general statement of the damage done either by the earthquake or resulting fires, and tidal waves, with loss of life and property.

#### "SECTION 3—HARBORS

- "(a).—Changes in harbors, if any.
- "(b).—Damage to sea walls, docks, wharves, and other harbor works.
- "(c).—Damage to shipping.
- "(d).—Tidal waves in seashore villages and towns.
- "(e).—General discussion with comment upon design of existing harbor structures and suggestions for changes, if any.

#### "SECTION 4—RAILROADS

- "(a).—Description of railroads; extent, design, etc.
- "(b).—Effect upon the lines in general. Displacement of tracks and location of structures, such as building, tunnels, bridges, rolling stock, etc.
- "(c).—General discussion with suggestions for changes, if any.

#### "SECTION 5—HIGHWAYS

- "(a).—Extent and design of paved highways and streets.
- "(b).—Damage to embankments, paving, etc.
- "(c).—General discussion.

#### "SECTION 6—BRIDGES

- "(a).—Nature and design of bridges for highways and railroads:
  - (1) Timber trestles; (2) Timber arches; (3) Stone arches; (4) Steel bridges.
- "(b).—Earthquake damage to bridges with reference to position and design.
- "(c).—General discussion.

#### "SECTION 7—DAMS

- "(a).—Nature and design of dams:
  - (1) Masonry; (2) Concrete; (3) Earth; (4) Rock-fill; (5) Special types.
- "(b).—Earthquake damage to dams with relation to design and position.
- "(c).—General discussion.

#### "SECTION 8—POWER PLANTS

- "(a).—Description of Japanese steam and hydro-electric plants:
  - (1) Dams and reservoirs; (2) Conduits, ditches, flumes, tunnels, etc.; (3) Pressure pipe lines; (4) Hydro-electric power stations; (5) Transmission lines; pole and tower; (6) Sub-stations; (7) Steam plants.
- "(b).—Damage to power plant structures in detail.
- "(c).—Discussion.

#### "SECTION 9—MUNICIPAL WORKS

- "(a).—Description of works in the earthquake are:
  - (1) Streets; (2) Sewers; (3) Water-works, reservoirs, dams, pipe lines, distribution reservoirs and pipe systems.

"(b).—Detailed description of damage.

"(c).—Use of water supply in the fires, if any, and effect of earthquake to shut off water supplies.

"(d).—General discussion of the design and damage. Street planning with reference to fires.

#### "SECTION 10—BUILDINGS

"(a).—Type of building subjected to former earthquakes.

"(b).—Description of Japanese buildings:

- (1) Domestic architecture; houses;
- (2) Religious architecture; temples;
- (3) Buildings in the western manner; brick, stone, concrete, reinforced concrete and steel frame.

"(c).—General description of design and damage to buildings of different types.

"(d).—General and specific description of foundation material under buildings; rock, earth, sand, etc.

"(e).—The design of specific structures with description of the earthquake damage.

"(f).—The design of specific structures with description of fire damage.

"(g).—The general effect of the earthquake on buildings.

"(h).—A theoretical discussion of stresses in a building in an earthquake.

"(i).—Discussion of all points set forth with comment on earthquake damage, fire, damage and recommendations.

"(j).—The material design of Japanese residences, the earthquake and fire damage, and future design.

#### "GENERAL SUMMARY—COMMENT AND DISCUSSION

"(a).—By those who have investigated the region.

"(b).—By the Committee.

"(c).—Reports by other Societies."

Any information on the points in question will be welcomed by the Committee. The importance of this study and the mass of data to be digested should impel all members to assist as completely as possible by submitting reliable and concise details to J. D. Galloway, Chairman, First National Bank Building, San Francisco, Calif.

### Changes and Developments in U. S. Reclamation Service

According to an article in the November-December issue of *The Reclamation Record*, a re-assignment of the Washington office of the Bureau of Reclamation and the re-organization of the field service went into effect December 1, 1923. The discontinuance of the services of twelve employees together with additional future adjustments, is stated to effect a saving of more than \$40 000 annually in salaries. Coincident is the separation from the service of fifteen consulting engineers employed on a per diem basis.

The engineering and operating branches of the work are now distinct, a move which Secretary Work has advocated ever since he dismissed Arthur P. Davis, Past-President, Am. Soc. C. E., as Director. Under the new conditions, Frank E. Weymouth, M. Am. Soc. C. E., continues as Chief Engineer.

In a letter dated November 27, 1923, addressed to Western Senators and Representatives, the Secretary of the Interior requested their assistance by way of "information, advice or suggestions" for use of the Special Advisers, stating

that "much can be accomplished toward establishing reclamation on a sound basis if men in your position familiar with reclamation work and its importance will give the Department the benefit of your views."

Until the report of the Fact Finding Commission has been received, judgment must be deferred. To date, it can safely be said that no evidence has been provided sufficient to warrant so phenomenal an overturning in the Reclamation Service.

### Engineers in Business and Public Affairs

Many instances refute the oft-repeated assertion that engineers do not interest themselves successfully in economic or public questions. Many railroad executives have had their early training as engineers. In the case of the Pennsylvania Railroad, both President Samuel Rea, Hon. M. Am. Soc. C. E., and Vice-President W. W. Atterbury, M. Am. Soc. C. E., are engineers.

In civic and industrial improvement work, the situation is likewise significant. As examples may be mentioned Baxter L. Brown, Director, Am. Soc. C. E., who is a member of the St. Louis Chamber of Commerce; Paul H. Norcross, M. Am. Soc. C. E., recently elected President of the Atlanta Chamber of Commerce; Ezra B. Whitman, Director, Am. Soc. C. E., who is Chairman of the Board of Efficiency and Economy in Baltimore, Md.; and Franklin D. Howell, M. Am. Soc. C. E., Member, Board of Freeholders, Los Angeles, Calif., which has recently drawn up a new city charter.

These are isolated instances of important positions held by engineers outside the engineering field, and are divergent both as to location and as to activity. They demonstrate forcibly the inaccuracy of the charge of uninformed individuals that engineers are not fitted to handle administrative or business details.

### The Temple Bill for the Topographic Mapping of the United States

Members have already learned from previous notes in the August, 1923, and the January, 1924, *Proceedings*, that the situation as regards Government topographic mapping is unfortunate. Only about 43% of the area of the United States has been mapped and of that possibly one-half was done years ago by methods which do not meet the requirements of the present day, so that a great deal is in urgent need of revision.

Congressman Henry W. Temple, a strong advocate of mapping, introduced a bill in the last Congress aimed to correct the situation. This bill was not considered and so was again introduced in the present Congress. It provides:

"That the President be, and hereby is, authorized to complete, within a period of twenty years from the date of the passage of this Act, a general utility topographical survey of the territory of the United States, including adequate horizontal and vertical control, and the securing of such topographic and hydrographic data as may be required for this purpose, and the preparation and publication of the resulting maps and data: *Provided*, That in carrying out the provisions of this Act the President is authorized to utilize the services and facilities or such agency or agencies of the Government as now exist, or may hereafter be created, and to allot to them (in addition to and not in sub-

stitution for other funds available to such agencies under other appropriations or from other sources) funds from the appropriation herein authorized, or from such appropriation or appropriations as may hereafter be made for the purpose of this Act.

"Sec. 2.—That the agencies which may be engaged in carrying out the provisions of this Act are authorized to enter into co-operative agreements with and to receive funds made available by any State or civic sub-division for the purpose of expediting the completion of the mapping within its borders.

"Sec. 3.—The sum of \$950 000 is hereby authorized to be appropriated out of any moneys in the Treasury not otherwise appropriated, to be available until the 30th day of June, 1925, for the purpose of carrying out the provisions of this Act, both in the District of Columbia and elsewhere as the President may deem essential and proper."

This bill has received a wide endorsement from engineers. Members who are favorably disposed can make their influence felt by urging their Congressmen to give it careful and favorable consideration.

### Wider Use of Labor-Saving Devices in Japanese Reconstruction

One of the noteworthy developments that have taken place in Japan following the recent disaster has been the large scale introduction of more modern labor-saving devices, such as automobile trucks, steam shovels, and other mechanical devices designed to take the place of human labor, says the Far Eastern Division of the Department of Commerce. The necessity for quick action and the lack of manual labor were largely responsible for this move. Contrary to popular opinion, Japanese day labor has never been plentiful, nor, in late years, cheap. The speed and efficiency with which the débris was cleared away has been a revelation to the Japanese, and the effects of this innovation should be far reaching; it may cut the Gordian knot of high wages and high production costs in industry, at the same time opening a market for American, specialized, highly automatic machinery.

As soon as the streets were cleared and material was available, temporary structures were put up with amazing speed. The Metropolitan Police Board reported that they were going up at the rate of 1 800 per day during October, and that, at the end of that month, the total number in Tokyo amounted to 92 807, half of the number destroyed. The majority of these temporary buildings were small, sufficient to hold only one family, but a considerable number of them took the form of barracks, each of which was capable of sheltering several families. As nearly one-third of the population were killed or have moved away, Tokyo should be fully housed very shortly. The construction of temporary shelters will continue for some time to come, however, as the former residents are returning to Tokyo rapidly and provision will have to be made for them.

It is reported that land values have taken a considerable drop throughout the city since the earthquake. Land quoted at 1 000 yen per taubo (about 36 sq. ft.) prior to the disaster has been appraised at around 200 yen since improvements have been destroyed. This fact will make it easier for the Capital Reconstruction Board to carry out condemnation for street and park plans and otherwise simplify matters a great deal.



## Intensive Study of Engineering Education

Teachers of engineering should be, *ipso facto*, investigators. The good teacher should not confine his study to the particular technical subject in hand, but extend it to embrace his profession and himself. Doubtless, such has often been the case and the progress in methods and means shows the results of such study, mostly, however, by independent effort, unrelated to the larger aspects of engineering education as a whole. Under the leadership of the Society for the Promotion of Engineering Education and with the generous assistance of the Carnegie Corporation, a broad intensive three years' study of the whole question is assured.

Agitation for such study has been going on among educators for about two years, centering in the activities of a Development Committee, under Professor Charles F. Scott, Past-President, A. I. E. E., and S. P. E. E., which considered the question "What can the Society for the Promotion of Engineering Education do in a comprehensive way to develop, broaden, and enrich engineering education?"

The Carnegie Corporation, after thorough review of the proposals, announced on October 30, 1923, the appropriation of \$108 000 for the work, extending over three years, divided in the amounts of \$24 000, \$36 000, and \$48 000, respectively. The entire work is under the charge of a committee of prominent educators representing all phases of study, of which Professor Scott is Chairman. Several members including Dean M. E. Cooley, Professor D. C. Jackson, and Secretary John H. Dunlap, are members of the Society. In addition, two non-engineering educators are to be included.

The investigation is to be directed toward "a study of the objects of engineering education and the fitness of the present curriculum for preparing the student for his profession. It will study the process by which the curriculum of fifty years ago has come to its present form; it will seek to set forth the nature and the weakness of the curriculum as at present administered; and it will indicate such modifications or developments as would seem to make for a sound, well balanced and fruitful course of study".

As Director, the Committee has chosen W. E. Wickenden, Mem. A. I. E. E., who has established headquarters on the Sixteenth Floor of the Engineering Societies Building. Mr. Wickenden brings to his new work a large experience in teaching and in charge of personnel work for the American Telephone and Telegraph Company. In this latter position, he came into intimate contact with both institutions and the industries, and, hence, is well equipped for his new work.

The Committee also has the assistance of Councillors selected from various interested sources; for the Society, President Loweth has appointed F. C. Shenehon and J. Waldo Smith, Members, Am. Soc. C. E., as such Councillors.

The whole subject was brought forcibly to the attention of a large number of engineers and educators who gathered at an informal dinner conference held at the time of the Annual Meeting of the Society on January 17, 1924. Those attending were convinced of the merit of the plan.

From all angles, this investigation appears favorable. It has excellent physical, moral, and financial support; it has a wide opportunity for real service.

## Encouragement for the Committee on Stresses in Railroad Track

Several recent donations to assist the work of the Special Committee on Stresses in Railroad Track have given added zest to this research work. A. N. Talbot, Past-President, Am. Soc. C. E., Chairman of the Committee, announces a contribution of \$2 500 from the Illinois Steel Company; to the American Railway Engineering Association a gift of \$1 250 from the Carnegie Steel Company for this same work; and a like amount to the same Association from another source. Such a display of interest in the technical work of committees is gratifying to its members as well as to the Society.

## Electrical Engineers to Discuss Railways

As a part of the Convention of the American Institute of Electrical Engineers, at Philadelphia, Pa., two sessions on Tuesday afternoon and evening, February 5, 1924, will be devoted to the subject of Railroad Transportation. Among those who will participate in the discussions are: Ralph Budd, M. Am. Soc. C. E., President, Great Northern Railway; N. D. Maher, President, Norfolk and Western Railway; C. H. Markham, President, Illinois Central Railroad; Edward G. Buckland, Vice-President, New York, New Haven and Hartford Railroad; and L. G. Coleman, Assistant General Manager, Boston and Maine Railway. Members of the Society desiring to attend will be welcome at these meetings, which are to be held at the Metropolitan Opera House. By registering at the local headquarters, in the Bellevue-Stratford Hotel, the necessary admissions may be obtained.

## Meeting of Mining and Metallurgical Engineers

Of especial interest to civil engineers will be some of the sessions relating to Iron and Steel, held in connection with the Annual Meeting of the American Institute of Mining and Metallurgical Engineers at the Engineering Societies Building beginning February 18, 1924. Among the interesting papers on Monday afternoon, February 18, will be those on "Economic Significance of Metalloids in Basic Pig Iron in Basic Open-Hearth Practice", by C. L. Kinney, Jr., of the Illinois Steel Company; "Effect on Steel of Variations in Rate of Cooling in Ingot Mould", by W. J. Priestly of the Metallurgical Sales Corporation; "Effect of Coke Combustibility on Stock Descent in the Blast Furnace", by Messrs. P. H. Royster and T. L. Joseph of the United States Bureau of Mines; "Over Strain in Metals", by Joseph K. Wood; and on Tuesday afternoon, February 19, a lecture on "Steel To-day and Yesterday", by Professor Albert Sauveur of Harvard University.

## St. Lawrence Waterway Investigation

The Society has already taken the initiative in advocating the appointment by Congress of a Technical Board to study and report on the improvement of the St. Lawrence River, and has asked the co-operation from the other National engineering societies that may be interested.

By authority of the Executive Committee acting for the Board of Direction, the Secretary has placed the matter before both Senator Henry Cabot Lodge,

Chairman of the Senate Committee on Foreign Relations, and Representative Samuel E. Winslow, Chairman of the House Committee on Interstate and Foreign Commerce, stating that:

"The American Society of Civil Engineers has had called to its attention the advisability and desirability of urging the enactment of legislation providing for the appointment by Congress of a Special Technical Board to investigate and report upon the improvement of the St. Lawrence River as recommended by the International Joint Commission.

"The Board of Direction of this Society believes such a Technical Board should be appointed and should be so constituted as to represent all phases of the problem. Accordingly I have been instructed to communicate with the Committees of the Senate and House of Representatives, to which this matter has been referred, recommending that a Commission, either confined to this country, or a Joint Commission, be appointed to give further study to the essential facts involved in the St. Lawrence Waterway project, so that Congress may be properly guided in its consideration of this problem, so important to a large section of the United States."

This letter has been sent to all the Local Sections with the request that they re-inforce the recommendation in the manner that seems most practical. Whatever the personal impressions of individual members, most engineers will agree that further authoritative information is imperative before any conclusion can be drawn. To this end, the efforts to stimulate the proposed study should receive the active support of the membership.

### Results in Standardizing Lumber

By appointment of President Loweth, Ellis A. Frink and Earl Stimson, Members, Am. Soc. C. E., represented the Society at a conference on lumber standardization called by the U. S. Department of Commerce at the request of the Central Committee on Lumber Standards and held in Washington, D. C., December 12 and 13, 1923. The recommendations of the Central Committee were drawn up in co-operation with a Special Consulting Committee on Lumber Standards composed of about thirty experts from almost as many organizations. The representative of the Society was M. F. Clements, M. Am. Soc. C. E.

The scope of this work and the results accomplished by the conference are given by Messrs. Frink and Stimson in their report, as follows:

"A Central Committee on Lumber Standards has been engaged since July, 1922, in the formulation of lumber size and grading standards, and with the assistance of a Consulting Committee of 31 members, representing all sides of the industry, had formed and reported to the U. S. Department of Commerce on October 31, 1923, their recommended American Lumber Standards.

"A general conference was opened at the Department of Commerce by the Secretary of Commerce, Mr. Herbert Hoover, December 12, continuing under his constant direction until the afternoon of December 13, in consideration of the report.

"Your representative co-operated closely with representatives of other technological associations in attendance—the architects, engineers, representatives of the railroad and other wood-using industries. The manufacturers and retailers worked in two other separate groups, each group co-operating in support of their respective findings.

"Roll call by organization showed approximately 150 in attendance, practically all of whom were representatives of 60 leading American Associations interested in lumber products.

"The recommendations of Section I, Standard Lumber Classifications, and Section II, Standard Grade Names and Classifications, were approved with only two slight nominal changes. On consideration of Section III, sharp differences between the manufacturers and retailers developed over the proposed minimum of  $\frac{3}{32}$  in., for Standard Yard Board. The retailers contended that the standards should specify a Yard Board of definite thickness in excess of  $\frac{3}{32}$  in. in the rough, commercially dry. This contention resulted in difference irreconcilable at the close of the first day's meetings.

"After extensive conferences of members representing the two viewpoints, an agreement was reached, reported to the conference, and later adopted by it as indicated in the following revision of Paragraphs 14, 15, and 16, of Section III:

"14. That the terms, standard board and extra standard board, and standard dimension and extra standard dimension, be adopted as designations for 1-in. boards (yard) and 2-in. dimension (yard), respectively, and applied to both softwoods and hardwoods.

"15. That  $\frac{3}{32}$  in., S1S or S2S, for standard board and  $\frac{3}{32}$  in., S1S or S2S, for extra standard board (measured at standard commercially dry shipping weight and moisture content for each species), be adopted as thicknesses.

"16. That  $1\frac{1}{8}$  in., S1S or S2S, for standard dimension, and  $1\frac{1}{4}$  in., S1S or S2S, for extra standard dimension (measured at standard commercially dry shipping weight and moisture content for each species), be adopted as thicknesses for Standard Dimension and Extra Standard Dimension, respectively, not more than 12 in. wide.

"Inasmuch as the change to include the  $\frac{3}{32}$  in. thickness was a step nearer the original suggestion by the technical members of the Committee, that there should be the one standard of  $\frac{3}{32}$  in. minimum, your representative acting in caucus with other representatives of technological associations decided to support the revision suggested.

"After some further discussion in the general conference, this action was approved by unanimous vote.

"In the opinion of your representative, the adoption of these standards marks a most progressive step in the simplification of construction practice and will result in immeasurable benefits to the American people."

Undoubtedly, this action is an encouraging development toward National standardization and of especial benefit to architects. From the standpoint of engineers, however, the greatest desideratum is for uniformity of structural grading. At present, most of the prominent lumber associations have their independent methods of classifying structural timbers, and the Government Bureau has still another. When these conflicting views are merged into a single series of accepted standardized gradings, an engineer will be able to specify lumber with the assurance of possible compliance in more than one kind of wood. Happily, there is hope for realization of this ideal in the continuation of the present series of conferences.

### Investigations of Reclamation Work

As has been repeatedly mentioned in *Proceedings*, the various questions involving accusations against the former engineering conduct of reclamation work have been referred to a Committee of Special Advisers appointed by Secretary Work. The profession was considerably gratified to know that an



engineer of standing, Elwood Mead, M. Am. Soc. C. E., would be a member of this Committee, insuring competent advice on the technical questions involved. Dr. Mead arrived in New York, N. Y., on December 19, 1923, from a nine months' trip to Australia and the Holy Land, and on December 20 went to Washington, D. C., leaving there the same day for his home in Berkeley, Calif. Secretary Work has claimed noteworthy results from the early work of the Special Advisers. Whatever this may refer to, it would appear that if the Board reviewed any engineering matters, it has been without the attendance of its only engineer member.

One of the charges of the Secretary of the Interior is that the estimates on reclamation work have shown a tendency toward wide variance with the final costs. Reviewing this phase of the controversy, *Engineering News-Record* for December 27, 1923, throws light on the matter by showing that the final costs in question were for work in excess of and not even contemplated by the preliminary figures. This is only one of many indications that reclamation investigation should deal primarily with questions of judgment and fact from the engineering viewpoint.

### **Society Secretary, a Member of Division of Engineering, National Research Council**

At the suggestion of Chairman Jewett of the Division of Engineering, National Research Council, that the Secretaries of the Founder Societies be made members of that body, President Loweth announces such appointment of Secretary Dunlap. In so doing it is expected that this important work may be kept in closer contact with the National engineering societies to the mutual benefit of all.

### **Activities of Engineering Foundation**

Engineering Foundation, according to the latest progress report of its Director, Alfred D. Flinn, M. Am. Soc. C. E., is interested in a variety of projects of potential value to civil engineers. Elsewhere in this number of *Proceedings* will be found notes covering experiments with the "salt velocity" method of water measurement, and the work of the Foundation's Committee on Arch Dam Investigations.

Other activities in which Engineering Foundation is interested, include the Division of Engineering of the National Research Council, the Committee on Marine Piling Investigations, and the Advisory Board on Highway Research.

### **New and Heavier Passenger Locomotive**

As indicative of the tendency toward heavier and more powerful locomotives, the Pennsylvania Railroad announces a new "Mountain" type engine, Class M-1, recently completed for heavy passenger service. Its essential features include 27-in. cylinders, of 30-in. stroke, operating four pairs of driving wheels, 72 in. in diameter. With the tender, the resulting length is about 85 ft., the weight about 544 000 lb., and the tractive effort 64 500 lb. Thus,

corresponding with an increase of 25% in weight, there is a gain of 45% in power. In view of the present efforts to standardize bridge loadings, structural engineers will find this latest example of increasing locomotive weight to be of more than passing interest.

### Further Financial Assistance for Arch Dam Investigations

Although the Society is not officially represented on the Committee of Engineering Foundation on Arch Dam Investigation, practically all the personnel of that Committee are members of the Society. Furthermore, the Society is vitally interested in this subject and will be glad to learn of its continued development.

During the past year, as noted in *Proceedings* for December, 1923, efforts have been confined to studies on existing dams and valuable assistance has been received from many public and private organizations.

A new development becomes possible by means of the further financial and engineering co-operation of the Southern California Edison Company, as announced recently by the Committee. This Company has presented surveys, preliminary designs, and estimates of cost for a proposed test dam. In addition, it has pledged \$25 000 toward this special task and has offered to attempt to interest other companies in the remaining financial support required.

As the actual start on this project is about to be made, felicitations for the Committee and its generous supporters are in order on behalf of all engineers.

### British Engineers in Favor of Co-Operation

Members of the Society who have become conversant with the progress of co-operative efforts between the Founder Societies, through the previous items in December, 1923, and January, 1924, *Proceedings* will be pleased to learn of the success of a similar project among British engineers.

Four National Founder Societies are parties to the plan in England: The Institutions of Civil, Electrical, and Mechanical Engineers and of Naval Architects. By a coincidence in both cases, the Secretaries of the civil engineering organizations are likewise Secretaries of the joint bodies.

The attitude of the Engineering Joint Council in England is clearly stated in a letter from H. H. Jeffcott, Secretary of the Institution of Civil Engineers, as follows:

"At the last meeting of the Engineering Joint Council, Mr. W. H. Patchell, who is one of the representatives of the Institution of Mechanical Engineers on that body, reported upon his recent visit to America. Mr. Patchell was exceedingly grateful for the cordial reception he was given at the hands of your Joint Committee on Co-operation.

"Our Engineering Joint Council were much interested to learn of the action recently taken in connection with co-operation between Engineers in America. The problems to be faced there are similar in many respects to those which have to be dealt with in this country, and I am desired to say that the Engineering Joint Council will always be glad to be kept *au courant* with developments in America, and to keep your Committee in touch with what is being done over here.

"May I ask you to convey to the American Joint Committee the best wishes of the members of the Engineering Joint Council for the success of this new body, whose future development the Engineering Joint Council will watch with much interest."

### **Importance of America's Inland Waterways**

Will the railroads of the United States be able to meet the rapidly growing demands of traffic, or must there be an intensive development of inland waterways? These insistent questions have caused attention to be fixed on inland waterways.

The desirability of determining what the inland waterways of the United States have been and are offering in the service of domestic and foreign commerce has led the Transportation Division of the Department of Commerce to compile the report, "Inland Water Transportation in the United States," which has been published by the Bureau of Foreign and Domestic Commerce as Miscellaneous Series 119.

Information on inland water transportation in its various aspects and on the various routes in use is scattered among a large number of publications. No one volume covering traffic statistics, facilities, services, and rates, as well as a discussion of the economic aspects of water transport, has been published within recent years. This present volume has sought to fill the need for a brief but well rounded report on the principal phases of inland waterway transportation in the United States at the present time. Historical material, largely statistical, has been included for the principal channels of traffic, in order to furnish a basis for comparison.

Copies may be obtained by application to the Superintendent of Documents, Government Printing Office, Washington, D. C., at the price of 15 cents per copy, prepaid.

### **Fortieth Anniversary of the American Institute of Electrical Engineers**

In connection with the Midwinter Convention of the American Institute of Electrical Engineers, to be held in Philadelphia, Pa., February, 4-8, 1924, special interest will center in the celebration of the Fortieth Anniversary of the Institute's organization. The junior member of the Founder Societies appears very mature. This event emphasizes the phenomenal development of this branch of engineering. The charter members and all officers, both former and present, may feel a justifiable pride in combined vision and accomplishment. The Institute is to be congratulated on its worthy past and its promise of continued usefulness.

### **Water Measurement by the "Salt Velocity" Method**

The "salt velocity" method, developed by Charles M. Allen and Edwin A. Taylor, Members, Am. Soc. C. E., is notable among the recent means devised for attacking the old problem of measuring the flow of water. This method is

fully described in a paper presented before the Annual Meeting of the American Society of Mechanical Engineers in December, 1923.

The principle involved is that an increase in salinity of water is accompanied by an increase in electrical conductivity. A dose of concentrated salt solution, therefore, is injected into flowing water and its passage by two fixed points is timed by electrical connections. Experiments have demonstrated its applicability independent of length of pipe or conduit, size, or velocity of flow. This should mean a convenience and usefulness long desired by engineers. It is hoped that Engineering Foundation may co-operate to further these investigations, correlating the results of older methods and extending the scope of the new one.

### Conference on Transportation

A National Conference on Transportation was held in Washington, D. C., January 9, 10, and 11, 1924, under the leadership of the Chamber of Commerce of the United States. This organization has had committees at work for several months on various distinct phases of the general problem, and reports of this work formed the basis for discussion by the large group of commercial, technical, and industrial leaders. The larger questions of the conference concerned (1) Government relations to railroad transportation; (2) taxation of transportation agencies; (3) railroad consolidation; (4) relation of the railroads to transportation by motor; (5) relation of the railroads to transportation by water; and (6) taxation of transportation agencies. Reports on these questions, synopses of which were printed in the technical press previous to the meeting, have been distributed for the benefit of delegates.

With other professional men, civil engineers are gratified to see these important economic facts having so large an engineering foundation, discussed under responsible auspices. Judging from the promising tone of the Washington Conference, much progress may be expected.

### New School of Surveying

A recent announcement from the American Geographical Society states that it is instituting a School of Geographic Surveying and Field Astronomy. This new course is intended to appeal to men who are interested in topographical work either for the government or private development projects and who cannot spend the time or money required for the ordinary university training. In other words, this course gives an intensive training in a particular subject with a relatively limited field in view. The pre-requisites of students are a moderate mathematical training, including familiarity with plane and spherical trigonometry, and facility with logarithmic computations. To these men, it is expected that one or two years of study will suffice, but even shorter periods may be chosen by those who may require them.

As outlined, the course includes a comprehensive study of the theory involved, a series of field problems and computations, and an examination. A diploma will be awarded to those completing the work. This course may answer the needs of many young men who appeal to engineers for sympathetic advice.



More complete information may be obtained by addressing the School of Surveying, American Geographical Society, Broadway at 156th Street, New York, N. Y.

### **Annual Meeting, American Association for the Advancement of Science**

The Seventy-Fifth Anniversary Meeting of the American Association for the Advancement of Science was held in Cincinnati, Ohio, December 27, 1923, to January 2, 1924.

The Association is extremely broad in its scope, embracing that large variety of subjects and endeavors which may be termed "scientific", each functioning under a separate section, as follows: A, Mathematics; B, Physics; C, Chemistry; D, Astronomy; E, Geology and Geography; F, Zoological Sciences; G, Botanical Sciences; H, Anthropology; I, Psychology; K, Social and Economic Sciences; L, Historical and Philological Sciences; M, Engineering; N, Medical Sciences; O, Agriculture; and Q, Education. The sections in turn may have a number of society affiliations as, for example, Section M, Engineering, in which ten National engineering and educational organizations affiliate.

In the breadth of subjects discussed, the number of well known speakers and the enthusiasm of those in attendance, this meeting marked a notable epoch in the Association's history. The general topic for the meetings of Section M, Engineering, was "Seventy-Five Years of Engineering Science, and Its Promise for the Future". The representatives of this Society were Arthur E. Morgan and M. J. Riggs, Members, Am. Soc. C. E. L. W. Wallace, Secretary of the Federated American Engineering Societies, is also Secretary of Section M.

### **Dinner of American Engineering Council**

The Annual Meeting of the American Engineering Council of the Federated American Engineering Societies, was held in Washington, D. C., during the week of January 7, 1924. The Conference on Public Works, held in this same connection is noted elsewhere in *Proceedings*.

Among other events, an important dinner was held on the evening of Thursday, January 10, attended by prominent engineers, educators, and Government officers, and addressed by such men as Herbert Hoover, M. Am. Soc. C. E., Secretary of Commerce, Nicholas Murray Butler, President of Columbia University, and Dwight F. Davis, Assistant Secretary of War. President Charles F. Loweth and Secretary John H. Dunlap, of the Society, attended as guests.

### **Development of Society Rooms**

Judging from the historical records, the subject of Society rooms has always been a "live" topic, as witnessed by the following extract from the minutes of the meeting of the Society of May 4, 1853:

"Mr. Laurie moved that a Committee be appointed to make application to Peter Cooper, Esq., for accommodation in the building he is now erecting for the use of Mechanical, Scientific, and other Associations."

This motion was adopted, and, on motion of Mr. Sidell, Messrs. Talcott, Craven, and Laurie were appointed as such Committee.

Correspondence with Mr. Cooper concerning this request appears later, but the matter seems to have been dropped, as eventually rooms were sought elsewhere.

The following extract is quoted from the minutes of the meeting of June 29, 1868:

"On motion, J. W. Adams, Esq., Vice-President, was requested to occupy for the present the rooms of this Society, for the purpose of ensuring at all business hours of the day a proper reception to the members of this Society especially the non-resident members."

It thus appears that the development into a permanent office and staff, and, later, a building owned by the Society, was sound, although slow and difficult; it reflects great credit on the foresight and acumen of the older members.

### Beware the Fake Engineer

Impostors who attempt to make capital out of alleged affiliation with the Society are quite frequent; unfortunately, they are often quite successful. For their protection the following information is given to members, thanks to the courtesy of E. N. Noyes, M. Am. Soc. C. E., Secretary-Treasurer of the Texas Section:

"On December 29th a man giving the name of —, tall, slender, small mustache, black eyes, age about 34, a good talker, gives the impression of being posted on engineering work, made application to the Technical Club of Dallas for assistance to pay hotel bill for himself, wife and child and for railroad fare to get to a job in Cincinnati.

"He could give no reference for the past twelve years either as to employers, family or friends on account of disagreements or lost addresses.

"The United Charities of Dallas got in touch with the similar organization in Cincinnati and inquiries were made to the concern supposed to employ Mr. —. This concern stated they had no employment for him.

"I understand Mr. — made similar requests for assistance in Fort Worth the previous week.

"The United Charities made arrangements to care for him and family for a few days, but I understand that he has left town. I am sending you this notice for your information.

"Mr. — applied to three churches of different denominations and claimed to be a member of each denomination."

### Deficiencies of Reclamation Work and Their Remedy

One of the most illuminating of the discussions on this subject from an engineering point of view is contributed by Thomas H. Means, M. Am. Soc. C. E. in *Engineering News-Record* for December 13, 1923. Mr. Means recognized what the Service has accomplished, also what it has failed to accomplish and the underlying reasons. In a frank way, he discusses the relations which have grown up with other Government offices, with the many and changing

officials, with the irrigation districts and with the farmers, also the handicaps imposed by these sometimes discordant but always powerful interests. As is to be expected, there have been mistakes both engineering, and administrative, but Mr. Means considers the work for which the Service itself was responsible remarkably free from critical blunders.

In prescribing for the present ills, he states:

"We agree with Secretary Work that the reclamation policy must be placed on a business-like basis. This does not mean the disruption of a valuable *esprit de corps* by the summary dismissal of a valuable man and a belated endeavor at fact-finding to determine why he was dismissed, but it means the following things among others:

"1.—Projects should be approved on the basis of their feasibility. Neither State lines nor political preferences should have any weight in the selection.

"This has been the endeavor of the Reclamation Service at all times. Any departure from this rule has been caused by some one outside of the Reclamation Service.

"2.—Before final approval of projects, these things should be assured:

- a.—Sufficient good land to stand the charge.
- b.—Water supply unfailing in quantity and of good quality.
- c.—Climatic conditions such that crops of value high enough to both support the farmer and enable him to pay his charges for water.
- d.—Location such that freight rates permit the shipment of its products to an established market with fair returns to the grower.
- e.—An economic need for the new agricultural area.

"3.—The charges for water should be assessed to the land in proportion to the benefits, not on a flat rate per acre as now.

"This will permit the inclusion of poorer tracts of land which can be used for pasture or some other such use. The assessing of charges on basis of benefits will remove many of the inequalities which now result in abandonment of land.

"4.—The construction charge should not exceed a sum which the farmer can pay out of the proceeds of his farming operations. This charge should include interest upon the unpaid balance.

"The lending of money without interest is the fundamental error of the reclamation law. There are to-day worthy projects, in regions where agricultural development is needed, which will cost more than the farmer can afford to pay. In such cases Congress should appropriate money for the excess, charging the farmer with the amount he can afford to pay.

"5.—The time of payment should vary with the project.

"A California project may be able to pay faster than one in Montana. A period of no payment but interest should be required in the early years while the farmer's resources are required to bring his ranch into full development.

"6.—Settlers on public land and owners of private land should be required to show financial strength sufficient to place the farm on a paying basis.

"7.—Sale or transfer should only be permitted when the financial obligation to the Government is completed or when the new owner is financially as sound as the former owner.

"8.—Operation and maintenance charges on unoccupied public lands should either be paid by the Government or added to the construction charge so no unfair burden be placed on early settlers.

"9.—All affairs connected with the details of project management should be placed in the hands of the farmers as soon as possible—preferably through Irrigation Districts.

"10.—Provision should be made for technical agricultural advice and co-operative handling of products through the Federal Department of Agriculture and State organizations. The farmers should help pay for this advice. Free advice like other free things is usually valued at its cost.

"11.—Endeavor should be made to cause the reclamation farmer to stand on his own legs, fight his own battles and, when hard times come, as they do to men in all walks of life, work out his problems as other men have to do. Blessed is he that doth not bellyache."

Both in editorials and in news service, *Engineering News-Record* has dealt intensively with all the questions involving Reclamation. These articles constitute a strong and logical defense against the charges brought by officials.

### 1924 Annual Meeting

This year's Annual Meeting will abide in the memories of those attending as significant in many respects. The prevailing atmosphere of harmony and good fellowship evidenced the efficient work of the old officers and committees, and confidence in the new.

The social events were largely attended, and their programs delightful; the business sessions were encouraging as to the steady progress maintained; the bestowal of Honorary Memberships and prizes was a fitting recognition of professional merit; the Conference of representatives of the Local Sections was largely attended and many subjects of interest to the Sections discussed; the sessions of the Technical Divisions were marked by papers and discussions of high quality; and throughout the whole meeting, the weather was well-nigh perfect.

A few of the sessions stood out with especial prominence. On the evening of the Smoker, January 17, 1924, Dr. Charles P. Berkey, Professor of Geology at Columbia University, spoke before a capacity house on "Exploration in the Desert Regions of Central Asia". The talk received universally favorable comment. On the same evening, more than 100 members met at dinner to discuss "Engineering Education", showing the widespread interest in this lively subject. Of the Divisions meetings, those of the Power Division were especially worthy of note as to attendance and sustained interest.

Although in point of numbers, this meeting does not compare with that of a year ago, it was markedly successful in every respect and warrants the sincere appreciation of the efforts of the Committees in charge.



## Activities of Local Sections\*

### Meetings of the San Francisco Section

A regular meeting of the San Francisco Section, which was preceded by a dinner, was held at the Engineers' Club, San Francisco, Calif., on October 16, 1923; Vice-President Frank G. White in the chair; Henry D. Dewell, Secretary; and present, also, 54 members and guests.

Secretary Dewell announced that the Questionnaire sent out by the Committee on Local Sections of the Society, Richard L. Humphrey, Chairman, had been submitted by the Board of Directors to a Special Committee, consisting of the Board of Directors, the Welfare Committee, and Messrs. N. A. Bowers, F. R. Muhs, H. L. Haehl, and E. J. Schneider, and that after studying the questions, the Special Committee had drafted its reply which had been forwarded to Mr. Humphrey.

A letter from Director W. L. Huber and Vice-President Grunsky was presented by the Secretary, asking the Section to subscribe \$100 to the Alfred Noble Memorial Fund.

After reading a letter from Secretary John H. Dunlap of the Society stating that he proposed to visit the San Francisco Section on November 14, 1923, the Secretary announced that a special dinner meeting of the Section would be held at the Engineers' Club on that date, at which Secretary Dunlap would be the guest of honor.

Mr. H. J. Brunnier for the Committee appointed to confer with representatives of the other professions to secure from the Supervisors of San Francisco a more equitable distribution of license fees, reported progress.

Secretary Dewell reported for the Committee on Structural Safety of Buildings, Mr. C. H. Snyder, Chairman, and Mr. E. T. Thurston, a member of the Committee, stated that the Committee stood ready to consider any suggestions that might be received.

On motion, duly seconded and carried, it was decided that the Section should subscribe \$100 to the Alfred Noble Memorial Fund.

An informal discussion on the subject "The Contractor and the Engineer", was opened by Herbert Nunn, General Manager of the Contractors' Association of Northern California and former State Engineer of Oregon, who was followed by Mr. H. C. Vensano. The subject was also discussed by Messrs. E. T. Thurston, Edward N. Prouty, H. J. Brunnier, A. J. Grier, C. J. Rhodin, F. B. Smith, and by J. L. Harrington of Kansas City, Mo., who was present.

### SPECIAL MEETING OF NOVEMBER 14, 1923

A Special Meeting of the San Francisco Section was held at the Engineers Club on November 14, 1923, at which Secretary John H. Dunlap of the Society was the guest of honor.

The meeting which was preceded by a dinner at which 71 members and guests were present, was called to order by President Elliott; Henry D. Dewell, Secretary; and present, also, additional members and guests, including a num-

\* For list of Local Sections, Officers, Rules, etc., see 1923 Year Book, p. 15 and p. 86.

ber of members of the Student Chapters of the University of California and Stanford University, who were present by special invitation.

Relative to the establishment of Experimental State Map Information Offices in which the U. S. Board of Surveys and Maps is interested, F. E. Bonner, District Engineer, U. S. Forest Service, pointed out the advantages of these offices to San Francisco engineers and offered the following resolution which was adopted unanimously:

"Whereas, It has been brought to the attention of the San Francisco Section of the American Society of Civil Engineers, that the Board of Surveys and Maps if the Federal Government is willing to authorize and co-operate in the creation of a Map Information Office to serve the State of California; and

"Whereas, This organization believes that the operation of such office will be of great service in the matter of making readily available to the public generally and the engineering profession in particular, the vast amount of map and survey data that had been collected by various Government agencies concerning California; and

"Whereas, It is the opinion of this organization that the City of San Francisco is undoubtedly the most central and convenient point from which to serve the public of the entire State in this matter; and

"Whereas, The California Development Association, maintaining in the Ferry Building a large office devoted primarily to public service, has kindly offered to assume the burden of maintaining a map information bureau as proposed for the State. Now, therefore, be it

"Resolved, That this organization most strongly urges the Board of Surveys and Maps to select the City of San Francisco for the location of the Government Map Information Office for California and to consider favorably the offer of the California Development Association to assume the obligation of maintaining the service contemplated."

President Elliott then introduced Secretary Dunlap who addressed the meeting reviewing the work of the Society.

The work of the Student Chapter of the University of California was described by Bertram W. Goodenough, President of the Chapter, and I. M. Ingerson, Chairman of the Student Engineering Council.

The President of the Stanford University Student Chapter, Mr. L. H. Anderson, spoke on the activities of that Chapter.

A general discussion of the work of the Society and the inter-relation of the Society, Local Sections, and Student Chapters, followed, the speakers being Messrs. Charles D. Marx, W. L. Huber, M. M. O'Shaughnessy, and Charles Gilman Hyde.

#### EXCURSION TO MILLIKIN DAM

On October 13, 1923, about 14 members and guests of the San Francisco Section made an excursion to Millikin Dam, under construction for the water supply of Napa, Calif. The design and construction of this dam was under the supervision of A. Kempkey, M. Am. Soc. C. E.

#### Annual Meeting of the Atlanta Section

The Annual Meeting of the Atlanta Section was held on December 17, 1923, at the Ansley Hotel, Atlanta, Ga.; President Searcy B. Slack in the chair; and Frederick H. McDonald, Secretary.

After receiving the reports of the President and Secretary for 1923, the following were elected as officers for 1924: President, James Houstoun Johnston; Vice-Presidents, B. M. Hall, Jr., and Paul H. Norcross; and Secretary, Frederick H. McDonald.

### Meeting of the Cincinnati Section

A regular meeting of the Cincinnati Section was held on December 10, 1923, at the Engineers' Club, Cincinnati, Ohio; President J. A. McDonough in the chair; and present, also, 5 members.

The minutes of the previous meeting were read and approved.

A letter from Mr. Alphonse M. Westenhoff was read, tendering his resignation as Secretary-Treasurer of the Section on account of business, which resignation was accepted with regret. Mr. Clifford N. Miller was elected to fill the office for the unexpired term.

A paper entitled "Industrial Engineering", by Mr. Clifford M. Stegner, was presented by the author, and was followed by a discussion of the subject.

### New Officers of the Dayton Section

At the December meeting of the Dayton Section, the following officers were elected for the ensuing year: President, J. H. Kimball; Vice-Presidents, J. K. Grannis and C. D. Putnam; and Secretary-Treasurer, C. H. Eiffert.

At the meeting, Mr. E. W. Lane who had recently returned from three years in China where he was engaged on engineering work, presented a very interesting address on "Flood Problems on the Huai River".

### New Officers of the District of Columbia Section

At the Annual Meeting of the District of Columbia Section held on December 11, 1923, the following officers were elected for the ensuing year: President, A. N. Johnson; Vice-President, James H. Van Wagenen; Secretary-Treasurer, Charles Dwight Avery.

### New Officers of the Lehigh Valley Section

At the Annual Meeting of the Lehigh Valley Section, the following were elected as officers for the ensuing year: President, Thomas Earle; Vice-Presidents, F. O. Dufour and L. C. Conant; and Secretary-Treasurer, M. O. Fuller.

### New Officers of the Los Angeles Section

The new officers of the Los Angeles Section for 1924 are, as follows: President, Franklin Thomas; Vice-Presidents, Samuel B. Morris and C. E. Noerenberg; and Secretary, F. G. Dessery.

These members, with Treasurer E. R. Bowen and Past-Presidents F. D. Howell and Ralph J. Reed, will constitute the Board of Directors of the Section for 1924.

### Meeting of the New York Section

The New York Section held the second of a series of meetings on Transportation, at the Engineering Societies Building, in New York, N. Y., on December 19, 1923; President James H. Edwards in the chair; Harold M. Lewis, Secretary; and present, also, about 185 members and guests.

The special subject for the evening, "Transportation by Bridges", was introduced by Mr. W. W. Drinker, Chief Engineer, Port of New York Authority, who spoke on "Dispersion *vs.* Concentration; the Freight-Handling Aspect of Bridges in the Port of New York". Mr. Drinker compared the results on north and south traffic of one large Hudson River crossing to Manhattan, and of four crossings, each of one-fourth the capacity. The latter arrangement would permit of leading the freight traffic directly to four separate zones of approximately equal freight density and would greatly decrease the north and south haulage in Manhattan.

Mr. Grover A. Whalen, Commissioner of the Department of Plant and Structures, New York, N. Y., described the traffic on the New York City Bridges. Traffic over the Harlem River is now dispersed between eight bridges, which, in 1922, carried 26 000 000 vehicles and 96 000 000 people. East River traffic is carried on four bridges which, in 1922, carried 30 000 000 vehicles and 380 000 000 people. Mr. Whalen urged the need of a new bridge, north of the Williamsburgh Bridge, to increase the dispersion of the interborough traffic.

Mr. Frederic A. Delano, Chairman of the Committee on Plan of New York and Its Environs, outlined the size of the task of planning for the entire Metropolitan District and stated that bridge connections was one of the most important problems which this Committee is studying.

Mr. Gustav Lindenthal, Consulting Engineer, New York, N. Y., described his plan for a Hudson River Bridge at Fifty-seventh Street, Manhattan. He stated that such a bridge was necessary to permit expansion of the Metropolitan Area and that it was needed both for rapid transit and vehicular connections. He suggested a connection, by viaduct across the island, with the Queensborough Bridge to Long Island City.

The subject was further discussed by Messrs. Robert Ridgway, John F. O'Rourke, and T. Kennard Thomson.

President Edwards announced that Mr. F. T. Llewellyn had been appointed as Chairman of the Membership Committee which would undertake an active campaign for new members.

### Meeting of the Northwestern Section

A meeting of the Northwestern Section was held at the St. Paul Athletic Club, St. Paul, Minn., on November 23, 1923; President J. B. Gilman in the chair; A. S. Cutler, Secretary; and present, also, 31 members and guests.

The minutes of the meeting of September 28, 1923, were read and approved.

On motion, Mr. F. R. McMillan was elected to represent the Section on the Board of Minnesota Federation of Architectural and Engineering Societies to replace Mr. P. E. Thian whose term expires on January 1, 1924.



The report of the Committee appointed to formulate rules for the award of prizes to members of the Student Chapter at the University of Minnesota, was presented, as well as a report of the same Committee on the relation of the Section to the student. On motion, duly seconded, these reports were accepted.

A letter from Director Fenkell was read, relative to the appointment of a Local Membership Committee to co-operate with the Board of Direction in the selection of members for the Society. On motion, President Gilman was authorized to appoint a Committee of three to act as a Membership Committee to carry out Director Fenkell's suggestion. President Gilman subsequently appointed Messrs. Darling, Wilson, and Wolff as such Committee.

In accordance with a request of the Minnesota Federation for co-operation in planning its Annual Convention to be held in Duluth, Minn., in February, 1924, on motion, duly seconded, the President appointed Messrs. Briggs, Wheeler, and Clement, a Committee to assist in promoting this Convention.

The appointment of Messrs. A. M. Burt and C. L. Pillsbury as representatives of the Section on the Metropolitan District Committee, was announced.

President Gilman introduced Secretary John H. Dunlap of the Society, who discussed the work of the Society. Following Secretary Dunlap's address, there was a general discussion of many of the details of the Society's program.

#### **New Officers of the San Diego Section**

At the Annual Meeting of the San Diego Section held on December 7, 1923, the following officers were elected for the ensuing year: President, J. Y. Jewett; Vice-President, B. B. Boyd; and Secretary-Treasurer, R. W. Whitaker.

#### **New Officers of the Spokane Section**

At the Annual Meeting of the Spokane Section held on December 14, 1923, the following officers were elected for the ensuing year: President, Eugene Logan; First Vice-President, H. S. Baker; Second Vice-President, F. C. Dunham; Secretary-Treasurer, Charles E. Davis.

## Minutes of Meetings OF THE SOCIETY

### OF THE TECHNICAL DIVISIONS

#### Sanitary Engineering Division

(Abstract)

**December 8, 1923.**—A meeting of the Executive Committee of the Sanitary Engineering Division was held at the office of the Chairman, Room 1235, Municipal Building, New York, N. Y., at which the following members were present: Messrs. Kenneth Allen, *Chairman*, Harrison P. Eddy, X. H. Good-nough, George T. Hammond, and J. Frederick Jackson.

Chairman Allen reported a balance of \$262.98 remaining from the 1923 appropriation, \$857.72 received on account of the Rudolph Hering Medal Fund, and a membership of 521 on December 1, 1923.

Announcement was made that a Progress Report on the New Jersey Sewage Experiments would be presented at the Annual Meeting by C. G. Wigley, M. Am. Soc. C. E.

On motion, Chairman Allen was requested to confer with the Chairman of the Committee on the Status of the Sanitary Engineer in the U. S. Public Health Service, and, if agreeable to him, to communicate with the President of the Society, to ascertain whether or not, if the Resolution in preparation by the Committee was submitted and favorably acted on by the Board of Direction as well as by the Division, the Board would authorize the same committee to act for the Society in presenting the Resolution to the proper authorities.

On motion, duly seconded, and carried, it was decided that the Progress Report received from the Committee on Friction of Sludge and a paper dealing with the same subject received from C. E. Keefer, Assoc. M. Am. Soc. C. E., a member of the Committee, should be stated in the Program of the 1924 Annual Meeting as a Progress Report of the Committee.

Chairman Allen presented a letter from H. C. H. Shenton, President of the Institution of Sanitary Engineers of Great Britain, in appreciation of the action of the Division in its appointment of a committee, and its desire, otherwise expressed, to co-operate in bringing about an International Convention of Sanitary Engineers in England in 1924.

Correspondence relative to the aims and standing of the Water Council of America, concerning which inquiry had been made, was presented by the Chairman who was requested to study the matter further.

Chairman Allen presented a proposed program for the Annual Meeting of the Division, and various details of the Annual Dinner, addresses, and excursions, were discussed.

Mr. Eddy presented a letter from Secretary Dunlap of the Society, dated November 12, 1923, stating that the Committee on Technical Activities and Publications of the Society had asked him to inquire as to the sentiment of the

Division regarding a change of name, in order to indicate a somewhat broader field of activity.

Chairman Allen also submitted a communication from Secretary Dunlap suggesting the advisability of outlining Division programs several meetings in advance.

On motion, duly seconded, and carried, it was decided that at present the Executive Committee does not think it wise to change the name of the Division and that Secretary Dunlap be informed that the matter of formulating programs for future meetings of the Division was under consideration by the Division.

### Brief Account of the Annual Meeting January 16-18, 1924

The Seventy-first Annual Meeting of the Society was held January 16, 17, and 18, 1924. The total attendance numbered about 1 100 members and guests. All the various sessions, technical, business, and social, were uniformly well attended.

One last-minute change in the program was necessitated by the illness of Dr. George E. Vincent, President of the Rockefeller Foundation, who had been scheduled to speak previous to the Smoker on the evening of January 17, 1924. In his stead, Professor Charles P. Berkey gave an intensely interesting lecture on some geological explorations conducted in the wilds of Mongolia. Otherwise, the meetings were conducted according to the official program.

On the occasion of the excursion through New York Harbor and along the water-front, special interest was taken in the visit to the Manhattan Shaft of the New York-New Jersey Vehicular Tunnel. The party was enabled to traverse the completed work as far as the shield at the end of the present excavation.

Fuller reports of the several meetings, the business transacted, and the papers read, will appear in *Proceedings* for March, 1924.

### New Local Sections of the American Society of Civil Engineers

The Constitutions of the following Local Sections have been approved by the Board of Direction since the list was prepared for the 1923 Year Book, pp. 116 et seq.:

North Carolina Section (Constitution Approved by Board, October 16, 1923).  
Charles E. Waddell, President; Thorndike Saville, Secretary-Treasurer.  
University of North Carolina, Chapel Hill, N. C.

## Announcements

The Reading Room of the Society is open from 9 A. M. to 6 P. M., and from 7 P. M. to 10 P. M., every day, except Sundays, New Year's Day, Washington's Birthday, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, and Christmas Day; during July and August, it is closed at 5 P. M.

## Future Meetings

**February 6, 1924.—8:00 P. M.**—A regular business meeting of the Society will be held, at which a paper by J. Charles Rathbun, M. Am. Soc. C. E., entitled "Analysis of the Stresses in the Ring of a Concrete Skew Arch", will be presented for discussion.

This paper is published in this number of *Proceedings*.

**March 5, 1924.—8:00 P. M.**—A regular business meeting of the Society will be held, and a paper by Ford Kurtz, M. Am. Soc. C. E., entitled, "The Hydraulic Design of the Shaft Spillway for the Davis Bridge Dam, and Hydraulic Tests on Working Models", will be presented for discussion.

This paper was published in *Proceedings* for December, 1923.

## Atlanta, Ga., Meeting

The Spring Meeting of the Society will be held at Atlanta, Ga., on April 9, 10, 11, and 12, 1924. The subject for discussion at the Technical Session will be "Phases of Hydro-Electric Development in the South". The Technical Divisions will also hold sessions at this meeting, at which subjects pertaining to their particular fields will be discussed.

## Searches in the Library

As the Library of the American Society of Civil Engineers has been merged in the Engineering Societies Library, requests for searches, copies, translations, etc., should be addressed to the Director, Engineering Societies Library, 29 West 39th Street, New York, N. Y., who will gladly give information concerning the charges for the various kinds of service. A more comprehensive statement in regard to this matter will be found on pages 35 and 36 of the Year Book for 1923.

## New Local Sections of the American Society of Civil Engineers

The Constitutions of the following Local Sections have been approved by the Board of Direction since the list was prepared for the 1923 Year Book, pp. 116 *et seq.*:

**North Carolina Section** (Constitution Approved by Board, October 16, 1923).

Charles E. Waddell, President; Thorndike Saville, Secretary-Treasurer, University of North Carolina, Chapel Hill, N. C.



**Syracuse Section (Constitution Approved by Board, April 16, 1923).**

Louis Mitchell, President; Henry G. Throop, Secretary-Treasurer, 2117 South Geddes Street, Syracuse, N. Y.

**New Student Chapters of the  
American Society of Civil Engineers**

The following Student Chapters have been authorized by the Board of Direction since the list was prepared for the 1923 Year Book, pp. 21 *et seq.*:

**College of the City of New York, Organized 1923.**

William Hoffberg, President; Bruce C. Hayter, Secretary, College of the City of New York, New York, N. Y.

**Marquette University, Organized 1923.**

M. Francis Linnan, President; Andrew L. Wapp, Secretary, 908 24th St., Milwaukee, Wis.

**Rice Institute, Organized 1923.**

W. T. Alexander, Jr., President; Paul E. Nash, Secretary-Treasurer, Rice Institute, Houston, Tex.

**University of Alabama, Organized 1923.**

James T. Meador, Secretary, University of Alabama, University, Ala.

**University of Michigan, Organized 1923.**

R. W. Preston, President; William K. Saunders, Secretary, 722 Dewey Avenue, Ann Arbor, Mich.

**University of North Dakota, Organized 1923.**

Ray V. Tilly, President; Richard B. Black, Secretary-Treasurer, 1002 Belmont Avenue, Grand Forks, N. Dak.

**University of Tennessee, Organized 1923.**

B. R. McBath, President; H. N. Estes, Secretary-Treasurer, University of Tennessee, Knoxville, Tenn.

## Membership

(From December 5, 1923 to December 31, 1923)

### Additions

MEMBERS	Date of Membership.
ACKENHEIL, ALFRED. Engr. and Supt., T. A. Gillespie Co. of New York, 3102 Landis St., Pittsburgh, Pa.....	Nov. 26, 1923
ALLEN, LEONARD BARNES. Supt., M. of W., C. & O. Ry., Allison Bldg., Richmond, Va.....	Nov. 26, 1923
AYRES, HERBERT SAMUEL. 921 Fifth Ave., Huntington, W. Va....	Nov. 26, 1923
BROWN, BENJAMIN ROSS. Chf. Engr., Dallas Ry., 318 Interurban Bldg., Dallas, Tex.....	Nov. 26, 1923
DUNCANSON, DOUGALD HENRY. Pres., Duncanson-Hanelson Co., Chronicle Bldg., San Francisco, Calif.....	Nov. 26, 1923
EDGEComb, RED EDWARD. Chf. Engr., City Bldg. Dept., 3016 Lafayette Ave., Omaha, Nebr.....	<div style="display: inline-block; vertical-align: middle;">           Jun. April 2, 1913            Assoc. M. May 13, 1918            M. Nov. 26, 1923         </div>
HOWELL, LESLIE DILLON. Archt. and Engr. (Knighton & Howell), 404 U. S. National Bank Bldg., Portland, Ore.....	<div style="display: inline-block; vertical-align: middle;">           Assoc. M. Jan. 19, 1920            M. Nov. 26, 1923         </div>
SHIBLEY, KENNETH. Mgr., California Filter Co., 1218 The Merchants Exchange, San Francisco, Calif.....	<div style="display: inline-block; vertical-align: middle;">           Assoc. M. Oct. 9, 1917            M. Nov. 26, 1923         </div>
SMITH, BRONSON HASBROUCK. Managing Engr., Meyer & Holler, 315 Wright and Callender Bldg., Los Angeles, Calif.....	Nov. 26, 1923
SQUIRE, FRANK CARTER. Engr., Presidents' Conference Committee, Federal Valuation of Railroads, 608 South Dearborn St., Room 1143, Chicago, Ill.....	<div style="display: inline-block; vertical-align: middle;">           Assoc. M. Oct. 7, 1914            M. Nov. 26, 1923         </div>
TURNER, FRANKLIN PIERCE. Prin. Asst. Engr., N. & W. Ry., Roanoke, Va.....	<div style="display: inline-block; vertical-align: middle;">           Assoc. M. May 6, 1908            M. Nov. 26, 1923         </div>
VOORHEES, STEPHEN FRANCIS. Archt. (McKenzie, Voorhees & Gmelin), 342 Madison Ave., New York, N. Y.....	Nov. 26, 1923

### ASSOCIATE MEMBERS

AKERS, ELTON DOUGLAS. Asst. Engr., City of Nashville, 1214 Linden Ave., Nashville, Tenn.....	Nov. 26, 1923
ALLEN, JAMES GRANVILLE. Chf. Engr., H. A. Donald & Co., Inc., 1 White St., Lexington, Va.....	Nov. 26, 1923
BAKER, JOSEPH ANTHONY. Chf. Engr., Amatol Ordnance Reserve Depot; Engr., Town of Hammondton and Mullica Townships, 217 Vine St., Hammonton, N. J.....	Nov. 26, 1923
BAKER, RALPH WELCOME. County Engr. for Howard, Martin, Midland and Ector Counties, Box 246, Big Spring, Tex.....	Nov. 26, 1923
BJERREGAARD, JAMES AUGUST. With Constr. Dept., H. L. Doherty Co., 10 Bridge St., New York (Res., 1306 Ocean Ave., Brooklyn), N. Y.....	Sept. 10, 1923
BRIGGS, REVOE CARLISLE. Asst. Engr., Water Resources Branch, U. S. Geological Survey, 328 Custom House, San Francisco, Calif.....	Nov. 26, 1923
BROWN, CARL WRIGHT. Asst. Chf. Engr., Missouri State Highway Dept., Jefferson City, Mo.....	Nov. 26, 1923
CAHILL, RALPH HUGHES. Engr., City of Milwaukee, 386 Beverly Rd., Milwaukee, Wis.....	Nov. 26, 1923

## ASSOCIATE MEMBERS—(Continued)

Date of  
Membership.

DE MOSS, SAMUEL. Instructor, Civ. Eng. Univ. of Washington (Res., 1750 West 50th St.), Seattle, Wash.....	{ Jun. Nov. 28, 1916 Assoc. M. Nov. 26, 1923
DIDIER, PAUL, JR. Asst. Engr., Public Service Comm., Box 641, Harrisburg, Pa.....	July 9, 1923
FRENCH, HENRY LENOX. Engr., Sumner, Miss.....	Nov. 26, 1923
GRIFFITH, JAMES RINALDO. 1134 Church St., Evanston, Ill.....	{ Jun. May 12, 1919 Assoc. M. Nov. 26, 1923
HANSEN, JOHN WILLIAM. Engr., Verner Coal & Coke Co., Salkeld Coal Co., Tasa Coal Co., Pittsburgh (Res., 318 Wilcox St., Carnegie), Pa.....	Nov. 26, 1923
HAZARD, PHILIP LEE. Asst. Engr., New York Bridge and Tunnel Comm. and New Jersey Interstate Bridge and Tunnel Comm., Canal and West Sts., New York, N. Y.....	Oct. 15, 1923
HOLWAY, ALVAH STORY. (Holway Eng. Co.), 505 Wright Bldg, Tulsa, Okla.....	Nov. 26, 1923
HOWARD, KENNETH GILLILAND. (Hitchman & Howard), Tampico, Mexico .....	Nov. 26, 1923
JONES, MADISON PERCY. Structural Engr., Marr & Holman, 701 Stahlmann Bldg., Nashville, Tenn.....	Nov. 26, 1923
KIRKHAM, HERBERT MARKEY. Supervision of Constr., Rutan, Russell & Wood, 1001 Century Bldg., Pittsburgh, Pa.....	July 9, 1923
MCNEILLY, ROBERT HUGH. Prof., Civ. Eng., Vanderbilt Univ., Nashville, Tenn. ....	Nov. 26, 1923
MEHRHOF, MELVILLE. Asst. in Eng., United Elec. Light & Power Co., New York, N. Y. (Res., Little Ferry, N. J.).....	Nov. 26, 1923
MITCHELL, FRANK. Chf. Engr. and Gen. Supt., Clayton-Mitchell Co., Greenville, N. C.....	Nov. 26, 1923
MONLEY, MICHAEL LIGOURI. Prin. Asst. Engr., The Valier-Montana Land & Water Co., Valier, Mont.....	Dec. 4, 1923
MORGAN, NEWLIN DOLBEY. Highway Bridge Engr., Bureau of Public Roads, 301 Custom House (Res., 3137 Arapahoe St.), Denver, Colo. ....	Nov. 26, 1923
PONSFORD, HENRY JORDAN. Gen. Contr. (H. T. Ponsford & Sons), (Res., 921 Robinson Boulevard), El Paso, Tex.....	{ Jun. Jan. 19, 1920 Assoc. M. Nov. 26, 1923
PORTER, FRED BAKER. Pres., The Fort Worth Laboratories, Box 1008, Fort Worth, Tex.....	Nov. 26, 1923
PRESTON, JOHN OWINGS. Asst. to the Pres., Warren-Knight Co. (Res., 6621 Opal St., Germantown), Philadelphia, Pa.....	Sept. 10, 1923
RAY, JAMES PERCY. Asst. Engr., Office of Dist. Engr., B. & O. R. R., 360 Short St., Lawrenceburg, Ind.....	July 9, 1923
ROSE, ALBERT CHATELLIER. Statistical Engr., Dist. No. 1, Bureau of Public Roads, U. S. Dept. of Agriculture, 372 East 49th St., North, Portland, Ore.....	Nov. 26, 1923
SEYMOUR, DONALD IRVING. Civ. Engr., Standard Oil Co. of California, 225 Bush St., Room 1218, San Francisco, Calif.....	{ Jun. Jan. 17, 1921 Assoc. M. Nov. 26, 1923
SMITH, HENRY BREVOORT. County Engr., Burlington County, 34 Ridgway St., Mt. Holly, N. J.....	Oct. 15, 1923

## ASSOCIATE MEMBERS—(Continued)

Date of  
Membership.

STAHL, HAROLD JOHN. Surv., City Engr.'s Office, Room 351, City Hall, San Francisco, Calif.....	Nov. 26, 1923
STRUTHERS, OTIS ST. CLAIR. Dist. Mgr., Raymond Concrete Pile Co., 1307 Washington Bldg., Los Angeles, Calif.....	Nov. 26, 1923
TWAY, ROBERT RAYMOND. Div. Engr., Oklahoma State Highway Dept. (Res., 237 East 15th St.), Oklahoma, Okla.....	Nov. 26, 1923
VON DEESTEN, ARTHUR PETER. Capt., Corps of Engrs., } U. S. A., 6th Engrs., Camp Lewis, Wash..... }	Jun. June 23, 1916 Assoc. M. Nov. 26, 1923
WEBER, CHARLES MARIA. 1021 North Commerce St., } Stockton, Calif. .... }	Jun. Mar. 2, 1915 Assoc. M. Sept. 10, 1923
WILLIAMS, ALAN FRANK. Asst. Engr., N. W. Pac. } R. R., Box 144, Sausalito, Calif..... }	Jun. Nov. 3, 1915 Assoc. M. Nov. 26, 1923
WILSON, HENRY EVERETT. Asst. Civ. Engr., E. E. C., U. S. N., Public Works Dept., Mare Island Navy Yard, Vallejo, Calif.	Nov. 26, 1923

## AFFILIATES

UNDERHILL, REUBEN LUKENS. Agricultural Engr. and Land Appraiser, 1366 Tamalpais Rd., Berkeley, Calif.....	Oct. 15, 1923
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## JUNIORS

AMBERG, GUSTAV ADOLF. With Byllesby Eng. Co., 1000 Capitol Ave., San Francisco, Calif.....	Nov. 26, 1923
BLACKMAN, STEWART. City Engr., La Crosse, Kans.....	May 28, 1923
CRUSE, WILLIAM ROY. Asst. Engr., City of Jackson, City Engr.'s Office, Jackson, Mich.....	July 9, 1923
ENGLISH, CHARLES CARMEN. 829 East 7th St., Pueblo, Colo.....	Nov. 26, 1923
FELDMAN, SOLOMON GEORGE. Chf. Draftsman, W. H. Wardwell, 628 Union Ave., Montreal, Que., Canada.....	Nov. 26, 1923
FRINCKE, MILTON HOTOPP. Civ. Engr., Gutleben Bros., 2638 Buckingham Rd., Los Angeles, Calif.....	Nov. 26, 1923
HAVEKOTTE, CARL ELLIOTTE. Care, New Fox Hotel, Tulsa, Okla..	Nov. 26, 1923
MEURSINGE, JOHANNES HENDRIK. Draftsman, Washington Water Power Co., E. 804 Thirty-eighth Ave., Spokane, Wash.....	Nov. 26, 1923
SEELY, HOMER RUSSELL. Draftsman, Delaware River Bridge Joint Comm., 2051 North 62d St., Philadelphia, Pa.....	Nov. 26, 1923
STANDLEY, DAVID. Engr. and Supt. of Constr., New England Foundation Co., Boston (Res., 34 Bisson St., Beverly), Mass.....	Oct. 15, 1923
VENTRES, DANIEL BRAINERD. With U. S. Geological Survey, 37 Municipal Bldg., Chattanooga, Tenn.....	Oct. 15, 1923
VON ABO, CECIL VIVIAN. Parys, Orange Free State, South Africa	May 28, 1923
WILSON, BYRON HOWE. 756 Park Pl., Elmira, N. Y.....	Nov. 26, 1923

## Reinstatements

## ASSOCIATE MEMBERS

Date of  
Reinstatement.

WHITMAN, NATHAN DAVIS.....	Dec. 12, 1923
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## Resignations

## MEMBERS

Date of  
Resignation.

ALMERT, HAROLD.....	Dec. 31, 1923
BISHOP, GEORGE WASHINGTON.....	Dec. 31, 1923



## MEMBERS—(Continued)

	Date of Resignation.
BLAKE, CARROLL.....	Dec. 31, 1923
CALDERWOOD, ISAAC GLIDDEN.....	Dec. 31, 1923
FARRINGTON, WILLIAM ROWE.....	Dec. 31, 1923
HAIGHT, HORACE DE REMER.....	Dec. 31, 1923
HIGSON, ALEXANDER HAMILTON.....	Dec. 31, 1923
McINTYRE, WILLIAM AINSWORTH.....	Dec. 31, 1923
SCHLUMPF, OSCAR LEONARD.....	Dec. 31, 1923
SCOTT, DUNBAR DOOLITTLE.....	Dec. 31, 1923
TEICHMAN, FRANK.....	Dec. 31, 1923
THOMAS, WILLIAM EDWARD.....	Dec. 31, 1923
TUFTS, WILLIAM.....	Dec. 31, 1923

## ASSOCIATE MEMBERS

BALDWIN, THOMAS ABBOTT.....	Dec. 31, 1923
BEST, BYRON GRAY.....	Dec. 31, 1923
BLACKMORE, GEORGE GLOVER.....	Dec. 31, 1923
BOWEN, EDWARD WITHERS.....	Dec. 31, 1923
BRAGONIER, ARTHUR TAYLOR.....	Dec. 31, 1923
CLAIBORNE, HERBERT AUGUSTINE, JR.....	Dec. 31, 1923
CLARK, HALE AUSTIN.....	Dec. 31, 1923
COLEMAN, DAVID.....	Dec. 31, 1923
COPLEY, GEORGE NOBLE.....	Dec. 31, 1923
FARRINGTON, HAROLD PHILLIPS.....	Dec. 31, 1923
FLANNERY, EARL HARRELL.....	Dec. 31, 1923
FULLER, MYRON ELMER.....	Dec. 31, 1923
GAILOR, CHESTER FRANCIS.....	Dec. 31, 1923
GRAY, HARRY MATT.....	Dec. 31, 1923
HEWS, WELLINGTON PRESCOTT.....	Dec. 31, 1923
HINDS, ARTHUR KLOCK.....	Dec. 31, 1923
HOLLIDAY, ALEXANDER RIEMAN.....	Dec. 31, 1923
HOSKINS, JOHN KURTZ.....	Dec. 31, 1923
HUTCHINS, HARRY CROCKER.....	Dec. 31, 1923
JACKSON, HERBERT ALFRED.....	Dec. 31, 1923
KANE, WALTER WARD.....	Dec. 31, 1923
KELSO, BYRON LYNN.....	Dec. 31, 1923
KILLION, LOUIS JOHN.....	Dec. 31, 1923
LASKER, JULIUS.....	Dec. 31, 1923
LIGHTFOOT, WILLIAM JOSEPH.....	Dec. 31, 1923
McDONNELL, FRANCIS REGIS.....	Dec. 31, 1923
McGREGOR, FLINT.....	Dec. 31, 1923
MILLER, FRANK BERNARD.....	Dec. 31, 1923
PHILLIPS, WALTER BELLEVILLE.....	Dec. 31, 1923
ROSER, EDWARD MARSHALL.....	Dec. 31, 1923
ST. HILL, FELIX PERCEVAL.....	Dec. 31, 1923
SCUDDER, SAMUEL OSBORNE.....	Dec. 31, 1923
SEGURA, VALERIANO.....	Dec. 31, 1923
SHANOR, PAUL GLADSTONE.....	Dec. 31, 1923
SHAW, SILAS FREDERICK.....	Dec. 31, 1923
SNOW, EDWARD CORTLANDT.....	Dec. 31, 1923
STILES, ALBERT IRVINE.....	Dec. 31, 1923
SYLVESTER, ALBERT HALE.....	Dec. 31, 1923

## ASSOCIATE MEMBERS—(Continued)

	Date of Resignation.
THOMAS, CHARLES RANDOLPH.....	Dec. 31, 1923
THOMPSON, ELMER ELLSWORTH, JR.....	Dec. 31, 1923
TRACK, FRANK ANTON.....	Dec. 31, 1923
WILLIAMS, WALTER SCOTT.....	Dec. 31, 1923
WILSON, HARRY PERCIVAL.....	Dec. 31, 1923

## AFFILIATES

KENNEDY, THOMAS PATRICK BERCHMANS.....	Dec. 31, 1923
REED, CARL SWEETLAND.....	Dec. 31, 1923
ROOKWOOD, NATHAN CHAMBERLAIN.....	Dec. 31, 1923

## JUNIORS

CORMAN, WILLIAMS.....	Dec. 31, 1923
EATON, HERBERT NELSON.....	Dec. 31, 1923
GREEN, JOHN SINGLETON.....	Dec. 31, 1923
HULL, NOAH ELDER.....	Dec. 31, 1923
McMULLEN, CLEMENTS.....	Dec. 31, 1923
PALMER, HERBERT MARTIN.....	Dec. 31, 1923
QUINCY, ROGER BRADSHAW.....	Dec. 31, 1923
SUEN, SILVANUS THOMAS.....	Dec. 31, 1923

## Deaths

ANDERSON, GEORGE GRAY. ( <i>Director.</i> ) Elected Member, February 7, 1906; died December 23, 1923.
BURKE, MILOW DARWIN. Elected Member, July 4, 1894; died May 29, 1922.
DANIELS, THOMAS REMINGTON HOLDEN. Elected Associate Member, February 6, 1907; Member, June 19, 1918; died November 7, 1923.
FOX, ALVIN BARTHOLDI. Elected Associate Member, May 15, 1917; died December 8, 1923.
KINNE, GEORGE WHITNEY. Elected Associate Member, December 5, 1906; died March 14, 1923.
LITTLE, CHARLES NEWTON. Elected Member, July 6, 1920; died August 31, 1923.
PATTON, WILLIAM BAIRD. Elected Member, May 2, 1911; died November 29, 1923.
PIERCE, LESLIE EDWARD. Elected Junior, October 14, 1919; died October 20, 1923.
WINSTON, ISAAC. Elected Member, July 11, 1921; died December 7, 1923.

## Total Membership of the Society, December 31, 1923

Members.....	4 822
Associate Members.....	5 297
Corporate Members.....	10 119
Honorary Members.....	13
Juniors.....	607
Affiliates.....	160
Fellows.....	9
Total.....	10 908

## Employment Service

The Engineering Societies Employment Service is under the joint management of the National Societies of Civil, Mining, Mechanical, and Electrical Engineers as a co-operative Bureau available only to their membership, and maintained by the contributions from the Societies and their individual members who are directly benefited.

**Men Available.**—Under this heading, brief announcements will be published without charge. These announcements will not be repeated, except on request received after an interval of one month. Names and records will remain in the active files of the Bureau for a period of three months and are renewable on request. Notice for *Proceedings* should be addressed to Employment Service, 33 West 39th Street, New York, N. Y., and should be received prior to the first of the month.

**Opportunities.**—A Bulletin of engineering positions available is published weekly and is available to members of the Societies concerned at a subscription rate of \$3 per quarter, or \$10 per annum, payable in advance. Positions which are not filled promptly as a result of publication in the Bulletin, may be announced herein.

**Voluntary Contributions.**—Members obtaining positions through the medium of this Service are invited to co-operate with the Societies in the financing of the work by nominal contributions made within thirty days after placement, on the basis of \$10 for all positions paying a salary of \$2 000 or less per annum; \$10 plus 1% of all amounts in excess of \$2 000 per annum; temporary positions (of one month or less), 3% of total salary received. The income contributed by the members, together with the finances appropriated by the four Societies named, will be sufficient, it is hoped, not only to maintain but to increase and extend the service.

**Replies to Announcements.**—Replies to announcements published herein, or in the Bulletin, should be addressed to the key number indicated in each case, with a two-cent stamp attached for re-forwarding, and forwarded to the Employment Service at the address given. Replies received by the Bureau after the positions to which they refer have been filled, will not be forwarded.

### MEN AVAILABLE

**REGISTERED ENGINEER, CIVIL AND ELECTRICAL,** Mem. A. I. E. E.; age 33; with twelve years' experience in the design and construction of dams, power plants, transmission lines and distribution systems, surveying, map-making, and sewerage systems. seeks connection as associate with firm of consulting engineers. Past two years spent in private practice. B-1173.

**CIVIL ENGINEER EXECUTIVE,** with unusual combination of technical and business training, wishes to connect with proposition in which he can make full use of his double line of experience, embracing structural work, reinforced concrete, water power, bridges, buildings, dams, project investigations, statistics, accounting, industrial systems department head, production manager. B-2310.

**CORNELL CIVIL ENGINEER,** Assoc. M. Am. Soc. C. E.; age 31; married; with nine years' of varied experience, including four years as U. S. Drainage Engineer, two years as Field Engineer on reinforced concrete construction, fifteen months as Draftsman with oil refinery on design of stills, steel and concrete structures, sewers, etc. Now available. Location, immaterial. B-2977.

**EXPORT MANAGER:** Commercial engineering; teaching, United States preferred; has held positions in the States, ten years and abroad, nine years, paying up to \$650 per month, including teaching, irrigation and sale of machinery, five years each, and roads three years. Salary increased on every job held, except consulting work. B-3340.

mon business, technical problems, either structural or mechanical, or go into field and take hold of job, and can fit into any organization. Desires connection with future, with some stable industry or organization. Any location except New York City. B-6202.

**MEMBER, AM. SOC. C. E.**, located in New York City. Will make maps, tracings, general or detailed plans for foundation, bridges, buildings or other structures. B-7007.

**WATER-WORKS AND FIRE PREVENTION ENGINEER;** fifteen years' practical experience. Thoroughly acquainted with the standard schedule for grading cities and towns and all other underwriters rules and regulations. Desires appointment in city service or connection with a recognized consulting engineer or with the insurance department of a large industry. B-3436.

**CIVIL ENGINEER, M. Am. Soc. C. E.;** graduate C. E.; age 40; married; health good. Sixteen years' continuous and responsible engineering and business experience; three and a half bridge and structural; last twelve and a half as consulting, designing and supervising engineer employing own staffs. Work has covered design and construction of water and sewer systems, pavements of all types, roads, bridges, estimates, reports, investigations, plans, specifications, expert testimony. Accustomed to executive and business responsibilities. Desires to give up practice if suitable opening available such as chief, executive, district or sales engineer or professorship. B-7009.

**ENGINEER, EXECUTIVE EXPERIENCE;**  
M. Am. Soc. C. E.; Graduate C. E. Mining,  
electrical, structural, industrial, business  
manager of consulting office. New York  
State License. A-5268.

**RECENT GRADUATE ENGINEER;** Available, with buying, selling, drafting, estimating and cost experience. B-5502.

**DRAFTSMAN**; Jun. Am. Soc. C. E.; married. Anywhere in United States. University graduate. Three months with Bridge Department Michigan State Highway; six months detail and design concrete on power house; four months Transitman and Computer for preliminary dam survey. B-7112.

**WATER-WORKS AND HYDRAULIC ENGINEER**; Graduate, M. I. T., 1908. Fifteen years' experience on design and supervision of construction of river improvements and water-works structures, such as dams, pipe lines, purification plants, etc. Good executive. Available on one month's notice to present employer. Full statement of experience and references on request. B-5850.

**STRUCTURAL ENGINEER;** Technical graduate; twenty years' experience, designing, detailing, checking, estimating, supervising, selling steel and reinforced concrete structure bridges and buildings; experienced also in manufacturing plants, millwright layouts, power transmission. Position wanted with architect, engineer or contractor. Vicinity of Philadelphia or New York preferred. B-7113.

**STRUCTURAL ENGINEER, Assoc. M. Am. Soc. C. E.;** Michigan graduate, 1916; married; now available for position of responsibility either in active practice or teaching.  
B-6157.

**CIVIL ENGINEER.** M. Am. Soc. C. E.; 1921 graduate; age 25; married. One year highway field and official work; three years highway bridge designing and construction. Prefers position with consulting or construction engineer. B-7166.

**MAINTENANCE AND STRUCTURAL ENGINEER**; age 36; engineering graduate; fourteen years' experience industrial construction and maintenance. Designs, plans, specifications, estimates, contracts, organizing of field forces, supervision of construction; specialty copper rod mill and wire mill work. Installation and maintenance of machinery, furnaces, boilers, material handling equipment. B-6169.

GENERAL MANAGER of successful irrigation, drainage, agricultural and industrial development property desires change Assoc. M. Am. Soc. C. E. Twenty years' engineering and executive experience on large projects, including three years exceptional business training as personal representative of nationally known capitalist. Rated highly on construction and economical management. Accustomed to full responsibility. Credentials A-1. Interview. B-7173.

**GRADUATE** of one of largest universities; age 30; unmarried; varied experience in construction, design and valuation work all over the country; general education and personal qualifications excellent. Handle large valuations, in responsible sense, in Government service, and just completed the construction, in sole charge, of a plant for a large oil company. Can care for com-

EXHIBIT A-20: "Continued" (continued)

[illegible]



## Additions to Engineering Societies Library\*

(From December 1 to December 31, 1923)

The statements made in these notices are taken from the books themselves, and this Society is not responsible for them.

### PERSONNEL MANAGEMENT.

By Walter Dill Scott and Robert C. Clothier. Chic. and N. Y., A. W. Shaw Co., 1923. 643 pp., illus., diagrams, tab., 8 x 5 in., cloth. \$4.00.

The authors have attempted to outline the principles of personnel adjustment in industry as they are known to-day and to show how these principles may be used as a basis for creating and maintaining agencies for the adjustment of the individual to the work he is best qualified to do. They discuss such questions as the use of rating scales, tests of mental alertness and of special ability and control charts. References accompany each chapter.

### ANUARIO DE MINERIA, METALURGIA, ELECTRICIDAD, VOL. 23.

Y Demas Industrias de España. Madrid, 1923. (Purchase.)

### COMMERCE YEARBOOK, 1922.

Including Early Part of 1923. U. S.-Bureau of Foreign and Domestic Commerce. (Gift.)

### VERSLAG OVER HET HAVENTOEZICHT, UITGEOEFEND IN 1922.

Published by arrangement with the Department of Labor and Commerce in Netherlands. (Gift.)

### IN THE MATTER OF CONSOLIDATION OF THE RAILWAY PROPERTIES

Of the United States into a Limited Number of Systems. By Samuel Rea. Statement for Pennsylvania Railroad System. May, 1923 and Suppl., June, 1923. (Gift.)

### DICTIONNAIRES MÉTHODIQUES ILLUSTRÉS ET EN PLUSIEURS LANGUES;

Les Transports; L'Usine; Le Béton armé; Travaux publics; Routes et ponts. (Purchase.)

### PRINCIPLES AND PRACTICE OF SURVEYING;

Vol. 1, Elementary Surveying. By Charles B. Breed and George L. Hosmer. Fifth Edition. N. Y., John Wiley & Sons; Lond., Chapman & Hall, 1923. 592 pp., illus., diagrams, maps, tab., 8 x 5 in., fabrikoid. \$4.00.

In this volume the authors have aimed to produce an elementary textbook containing the essentials of a comprehensive knowledge of practical surveying, and at the same time suitable for the use of students. For the present edition the chapters on observation for meridian and latitude, on city surveying and on the calculation of traverses have been completely revised, the tables and methods for observing Polaris have been improved, and the chapter on city surveying and planning has been rearranged and improved.

### LIQUID AIR AND THE LIQUEFACTION OF GASES.

By Thomas O'Connor Sloane. Third Edition. N. Y., 1920. (Purchase.)

### THE NEW PHYSICS.

By Arthur Haas. N. Y., E. P. Dutton & Co., 1923. 165 pp., 8 x 5 in., cloth. \$2.50.

Contents: Electromagnetic Theory of Light; Molecular Statistics; Electron Theory; Quantum Theory; Theory of the Chemical Elements; Theory of Relativity and Gravitation; Historical Summary; Index. In these lectures the author has supplied a connected, illuminating account of the present day structure of physics, in a form within the reach of the average scientific reader. Mathematical formulas have been omitted.

\* Unless otherwise specified, the reviewed books in this list have been donated by publishers.

**COMPREHENSIVE TREATISE ON INORGANIC AND THEORETICAL CHEMISTRY, Vol. 4.**

By J. W. Mellor. Lond., and N. Y., Longmans, Green & Co., 1923. 1074 pp., illus., diagrams, 10 x 6 in., cloth. \$20.00.

The fourth volume of this great treatise opens with a chapter on the structure of matter. After this, radium and radio-activity are discussed and from thence the author proceeds to an account of the architecture of the atom. The remaining chapters are devoted to detailed summaries of the chemistry of beryllium, magnesium, zinc, cadmium, and mercury. As in the earlier volumes, copious references to original sources of information are given, so that the needs of workers in research are satisfactorily met.

**CONFÉRENCES SUR LES METAUX.**

By Marcel Guichard. Third Edition. Paris, Gautheir-Villars et Cie., 1924. 355 pp., diagrams, 10 x 6 in., paper. 30 fr.

A textbook on the chemistry of metals, for first-year university students with a knowledge of the general laws of chemistry. The treatment is descriptive and is planned to cover a course of thirty lectures.

**KRISTALLE UND RONTGENSTRAHLEN.**

By P. P. Ewald. (Naturwissenschaftliche Monographien und Lehrbücher, Bd. 6.) Berlin, Julius Springer, 1923. 327 pp., illus., diagrams, 10 x 6 in., paper. \$6.00.

This book had its origin in six lectures in the determination of the structure of crystals, delivered by the author at the University of Munich, in January, 1921. It gives an account, in non-mathematical language, of present ideas concerning the structure of crystals, and of the way in which the Roetgen Ray is applied to its determination.

**SYSTEMATIC SURVEY OF RUBBER CHEMISTRY; A BIBLIOGRAPHY.**

By Clayton W. Bedford and Herbert A. Winkelmann. N. Y., Chemical Catalog Company, 1923. 385 pp., 10 x 6 in., cloth. \$7.00.

This book is a survey, as accurate and complete as possible, of the books and articles on the chemistry of rubber, published before January 1, 1923. The authors have searched the collections of fourteen large libraries. The references are presented in an author arrangement and also by subject. An index of the important domestic and foreign patents is also given. In addition to the bibliography, two monographs are included. The first, entitled "Organic Accelerators of Vulcanization", being by Dr. L. B. Sebrell. The second, "Theories of Vulcanization", is by Dr. W. J. Kelley.

**FLUORSPAR DEPOSITS OF KENTUCKY.**

By Louis Wade Currie. (Kentucky Geological Survey. Series 6, Vol. 13.) 1923. (Purchase.)

**BIBLIOGRAPHY OF MUSEUMS AND MUSEOLOGY.**

By William Clifford. N. Y., 1923. (Gift.)

**REPORT OF THE COMMITTEE OF THE PRIVY COUNCIL**

For Scientific and Industrial Research, for the year 1922-23. 8th Annual Report. (Purchase.)

**REPORT OF OXYGEN RESEARCH COMMITTEE**

Of Great Britain. 1923. (Purchase.)

**WERDEGANG DER ENTDECKUNGEN UND ERFINDUNGEN.**

Heft 3, Elektrische Strahlen und ihre Anwendung, von Franz Fuchs. Heft 5, Die Entwicklung der chemischen Grossindustrie, von A. Zart. Heft 9, Die Entwicklung der Chemie zur Wissenschaft. (Purchase.)

**TRANSACTIONS, VOL. LXXXVI, 1923.**

American Society of Civil Engineers. (Exchange.)

**PAPERS OF FALL MEETING, 1922.**

And Committees for 1923. Texas Section, American Society of Civil Engineers. (Gift.)

**TRANSACTIONS, VOL. 66, 1922-23.**

Institution of Engineers and Shipbuilders in Scotland. (Exchange.)

**SOCIÉTÉ DES INGÉNIEURS CIVILS DE FRANCE.**75<sup>e</sup> Anniversaire, 1848-1923. (Gift.)**SELECTED ENGINEERING PAPERS, Nos. 1-9.**

Institution of Civil Engineers. (Exchange.)

**BIENNIAL REPORTS, 1915-16; 1917-18; 1919-20; 1921-22.**

Nevada State Engineer. (Gift.)

**TABLES AND OTHER DATA FOR ENGINEERS AND BUSINESS MEN.**

By Charles E. Ferris, Compiler. Twenty-fourth Edition. Knoxville, Tenn., 1921. (Purchase.)

**ENGINEERING DRAWING.**

B. H. H. Jordan and R. P. Hoelscher. N. Y., John Wiley &amp; Sons; Lond., Chapman &amp; Hall, 1923. 351 pp., illus., diagrams, tab., 9 x 6 in., cloth. \$3.00.

A textbook on general engineering drawing which endeavors to present the essentials of the subject in a harmonious course. The first section of the book sets forth the elementary fundamental theories of drawing, describes the four fundamental kinds of projections, and shows how they are applied in mechanical and freehand drawing. It also discusses shop terms and process, sketching and the reproduction of drawings. In the second section these principles are applied to various fields of drafting, such as architectural, structural, map and patent office drawing. Chapters on design and on chart and diagram drawing are included. An appendix contains symbols and conventions, methods of geometrical construction and tables of data.

**LECONS SUR LES FONCTIONS UNIFORMES.**

By Gaston Julia. (Collection de Monographies sur la Théorie des Fonctions). Paris, Gauthier-Villars et Cie., [1923]. 149 pp., 9 x 6 in., paper. 15 fr.

This work, one of a series of monographs on the theory of functions, is a course of lectures given in 1920 at the College of France on the Pécot foundation. It is intended to be understandable by any one with a knowledge of analysis. After a preliminary chapter, the author studies Picard's theorems and the extensions of Landau, Carathéodory and Schottky; the normal families of functions; the behavior of a function around an essential singular point; the continuous and discontinuous regular approximation of an essential singular point; and the discontinuous irregular approximation of an essential regular point. The book includes the personal contributions of the author as well as a review of previous work.

**BOILER CHEMISTRY AND FEED WATER SUPPLIES.**

By J. H. Paul. Second Edition. Lond., and N. Y., Longmans, Green &amp; Co., 1923. 252 pp., diagrams, tab., 9 x 6 in., cloth. \$4.50.

The author discusses boiler waters, scales and deposits, softening, carbonic acid and its action on iron, corrosion, condensed waters, priming, and other topics of importance. Considers especially the chemical reactions that take place in high-pressure boilers, their effect upon the steaming capacity of the boiler and upon the boiler itself. The new edition has been revised.

**DIE STEUERUNGEN DER DAMPFMASCHINEN.**

By Heinrich Dubbel. Third Edition. Berlin, Julius Springer, 1923. 394 pp., diagrams, 9 x 6 in., boards. \$2.40.

This work treats of the theory and design of valve gears and reversing gears for reciprocating steam engines. The author confines himself almost entirely to types that meet the requirements of modern high speed engines working under high pressures. The book is intended for designers. This edition omits some information on old and foreign types which appeared in earlier issues and contains a fuller treatment of reversing gears.

**OFFICIAL PROCEEDINGS, 1922 AND 1923.**

Master Boiler Makers' Association. (Purchase.)

**BILDTELEGRAPHIE.**

By Arthur Korn. Berlin u. Leipzig, Walter de Gruyter &amp; Co., 1923. 146 pp., illus., diagrams, 6 x 4 in., boards. 25 cents.

A brief survey of the most important methods and apparatus for transmitting handwriting, drawings and photographs by telegraphy. A historical introduction reviews the early investigations, reaching back over fifty years. The principles of telegraphic copying and of writing at a distance are then explained and the methods for transmitting photographs are set forth. While the book gives special attention to Dr. Korn's own methods, those of other investigators are not neglected. The final chapter discusses television.

**ELECTRIC GENERATORS, MOTORS AND CIRCUITS. LIGHTNING . . . . CONDUCTORS, PROTECTORS AND ARRESTERS.**

By Shiv Narayan. (Electrical Engineering Booklet, Nos. 1 and 3.) Roorkee, India, The Author, 1924. No. 1, 32 pp., illus., diagrams, 9 x 6 in.; No. 3, 35 pp., illus., diagrams, 9 x 6 in., paper. 50 cents each.

These pamphlets, by the Professor of Electrical Engineering and Physics at Thomason College, Roorkee, India, are intended for students and those in search of elementary information on their subjects. The first contains data on direct current generators, motor and currents; the second describes lightning and the methods in use to protect buildings, machinery and electric lines. The books are non-mathematical and the author endeavors to present his information in an interesting way.

**ELEKTRISCHE TEMPERATUR-MESSGERÄTE.**

By Georg Keinath. Münich u. Berlin, R. Oldenbourg, 1923. 275 pp., illus., diagrams, 10 x 7 in., paper. \$2.40.

This is an elaboration of the chapter on pyrometers in the author's book, "Technik der Elektrischen Messgeräete." It includes sections on thermoelectric pyrometers, resistance thermometers, radiation pyrometers, instruments for electric pyrometers and on the applications of electric thermometry in power plants, glass and ceramic works, the metal industry and electrical machinery. The book is written especially for the man in practice who wishes to know how such apparatus works and what its properties are.

**ELEMENTS OF STORAGE BATTERIES.**

By Cyril M. Jansky and Harry P. Wood. 1923. (Industrial Education Series). N. Y., McGraw-Hill Book Co., 241 pp., illus., diagrams, tab., 9 x 6 in., cloth. \$2.50.

This book is intended to meet the need for simple, elementary exposition of the principles, operation and maintenance of storage batteries, which has been created by the extensive use of these converters of energy and by the radical changes in practice during recent years. The authors have kept in mind the needs of the man without special training who uses or operates storage batteries and wishes to know something about the operation and repair of them.

**HANDBOOK ON CONTROLLERS FOR ELECTRIC MOTORS.**

Electric Power Club. (Standards of the E. P. C.) Fifteenth Edition. 1923. (Gift.)

**INTRODUCTION TO THE STUDY OF ALTERNATING CURRENTS.**

By Albert E. Clayton. Lond., and N. Y., Longmans, Green & Co., 1923. 296 pp., diagrams, 9 x 6 in., cloth. \$3.50.

This textbook for beginners aims to assist them to a sound knowledge of the fundamentals which are essential to advanced study and also to successful practice. The author has restricted himself to a discussion of circuits, an elementary but thorough treatment of the transformer and polyphase alternator and an elementary treatment of the polyphase induction motor. Little mathematical knowledge is necessary.

**PRINCIPLES AND PRACTICE OF TELEPHONY.**

By Jay G. Mitchell. N. Y., McGraw-Hill Book Co., 1923. 3 Vol., illus., 8 x 5 in., cloth. \$2.50. Vol. 1, Principles and Apparatus. Vol. 2, Circuit Elements and Power Plants. Vol. 3, Toll Equipment, Traffic and Trunking.

These books form part of a five-volume text on telephone engineering, based on material which first appeared as a serial in Telephony, entitled "Home Study Course in Telephony". The work is intended for men engaged in telephone work who wish to learn the principles that underlie the apparatus and methods which they use and to broaden their acquaintance with telephony.

**PROCEEDINGS OF 1923 CONVENTION; VOLS. 79 AND 80.**

National Electric Light Association. (Exchange.)

**SWITCHING EQUIPMENT FOR POWER CONTROL.**

By Stephen Q. Hayes. N. Y., McGraw-Hill Book Co., 1921. 463 pp., illus., diagrams, 9 x 6 in., cloth. \$4.00.

This, the first American book on the subject, is primarily intended to furnish the information which the actual switchboard operator needs in order to keep the equipment in his charge in good condition. The varieties of switches, fuses, circuit-breakers, relays, lightning arresters and other apparatus are described first and their purposes and capabilities explained. This is followed by consideration of the main connection in a power plant and the ways to install them to secure the greatest security and flexibility. The book closes with chapters on switchboard panels, control desks and the general arrangement of the switching equipment in the plant.



**VERSCHLEIERUNG DER ANGABEN VON ELEKTRIZITÄTSZÄHLERN UND ABHILFE.**

By Arthur Geldermann. Berlin, Julius Springer, 1923. 126 pp., diagrams, 9 x 6 in., paper. \$1.45.

This book is on the methods of preventing or detecting theft of electric power. The author describes various methods for influencing the registration of meters and shows how these may be detected or prevented. The discussion is confined to three-phase distribution systems. The book is intended for those engaged in setting meters and for inspectors.

**DIRECT-ACTING STEAM PUMP.**

By Frank F. Nickel. Second Edition. N. Y., McGraw-Hill Book Co., 1923. 258 pp., illus., diagrams, tab., 9 x 6 in., cloth. \$3.00.

The development of this pump, the types in use, the details of the steam and water ends, the factors that affect its performance, its suitability for various purposes, and its operation are considered. A number of changes have been introduced in this edition.

**MATERIALS AND THEIR APPLICATION TO ENGINEERING DESIGN.**

By E. A. Allcut and E. Miller. Lond., Charles Griffin & Co.; Phila., J. B. Lippincott Co., 1923. 519 pp., illus., diagrams, tab., 9 x 6 in., cloth. \$12.50.

This book is not intended to replace textbooks on the theory and general principles of applied mechanics but to supplement them by providing the engineer with information which will assist him to select suitable materials for commercial use. It discusses the testing and heat treatment of metals and alloys, gives much data on their properties and shows by typical examples how these materials are used. Some attention is paid to non-metals. The subject is treated on economic and practical lines. The figures, curves and other data are taken from commercial supplies, not from samples made of comparatively pure metals under laboratory conditions. The authors write from the point of view of the engineer rather than the metallurgist.

**APPLICATION OF STONE DUST IN COAL MINES.**

Great Britain Mines Dept.-Safety in Mines Research Board. Paper No. 2. (Purchase.)

**MANUAL DE INSTALACION DE RUEDAS PELTON.**

By Gabriel Sanin Villa. Colombia, Antonio J. Cano, [1923]. 154 pp., tab., 9 x 6 in., paper. (Price not given.)

A practical handbook on the selection and installation of Pelton wheels. Explains the calculations necessary, describes the accessories and contains the tables required by the engineer. The book, the work of a member of the American Institute of Mining and Metallurgical Engineers, was awarded a gold medal at the Exposición Industrial de Medellín, 1923.

**SAFETY IN MINES RESEARCH BOARD REPORT, 1921-22.**

Great Britain-Mines Dept. (Purchase.)

**SELF-CONTAINED MINE RESCUE OXYGEN BREATHING APPARATUS.**

By D. J. Parker, G. S. McCaa, and E. H. Denny. U. S.-Bureau of Mines. 1923. (Gift.)

**ENGINE-ROOM PRACTICE.**

By John G. Liversidge. Eleventh Edition. Lond., Charles Griffin & Co.; Phila., J. B. Lippincott Co., 1923. 429 pp., illus., diagrams, 8 x 5 in., cloth. \$6.00.

This textbook is intended for students and apprentices but should also be useful for reference to young engineers. It covers the care, maintenance and repairing of the machinery of steamships, including the auxiliary electric and refrigerating machinery, and has chapters on the duties of engineers in the Royal Navy and leading steamship companies. The present edition has been enlarged by the addition of information on steam turbines and has been revised throughout.

**ENGINEERING REPORT ON ELECTRIFICATION**

Of Denver and Rio Grande Railroad, Submitted by General Electric Company. Schenectady, N. Y. (Gift.)

**INSTRUCTIONS FOR OPERATION, CARE AND REPAIR**

Of Bearings and Shafting. Reprint of Chapter 9 of Manual of Engineering Instructions. 1923. (Purchase.)

**PORT OF PHILADELPHIA, PA.**

Including Camden, N. J., Chester, Pa., and Wilmington, Del. U. S. Engineer Dept.-Board of Engineers for Rivers and Harbors. (Port Series, No. 4.) 1923. (Gift.)

**PROCEEDINGS OF THE 16th ANNUAL CONVENTION, 1923.**

Indiana Sanitary and Water Supply Association. (Gift.)

**REPORTS ON OBSERVATIONS FOR YEAR ENDING MARCH 31, 1922.**

Great Britain-Committee for the Investigation of Atmospheric Pollution. (Purchase.)

**SEWAGE TREATMENT IN THE UNITED STATES;**

Report on the Study of Fifteen Representative Sewage Treatment Plants. By H. H. Wagenhals, E. J. Theriault, and H. B. Hammon. (Public Health Bulletin 132.) 1923. (Purchase.)

**TILE-TRENCHING MACHINERY.**

By D. L. Yarnell. Revised March, 1923. (U. S.-Dept. of Agriculture, Farmers' Bulletin 1131.) (Purchase.)

**INDUSTRIAL COST ACCOUNTING FOR EXECUTIVES.**

By Paul M. Atkins. N. Y., McGraw-Hill Book Co., 1923. 322 pp., illus., 9 x 6 in., cloth. \$4.00.

This book is intended to show executives some of the possible uses of cost accounts and to show how these benefits may be obtained. For the latter purpose, a system for recording costs is shown. This describes methods for a manufacturing business of the production order type, the discussion being confined to methods that have given satisfaction over a wide range of conditions. A bibliography is included.

**PROFITABLE MANAGEMENT.**

By J. Lee Nicholson. N. Y., Ronald Press Co., 1923. 117 pp., 8 x 5 in., cloth. \$1.25.

Contents: Business Failures; Organization; Budgeting Control; Conservation of Invested Capital; Control of Production and of Production Cost; Labor; Uniform Cost-Finding Methods; Marketing the Product; Operating Inventories; Merchantile Business; Appendix Selected List of Publications. Mr. Nicholson presents a brief summary of the fundamentals of business control, written in a broad spirit and expressed simply, yet clearly. He hopes that the simplicity of the book may stimulate those engaged in management to broader constructive thought and action.

**LEAD.**

By J. A. Smythe. (Monographs on Industrial Chemistry.) Lond. and N. Y., Longmans, Green & Co., 1923. 343 pp., illus., tab., 9 x 6 in., cloth. \$5.25.

This book aims at giving, within somewhat restricted limits, the broad outline of the chemistry of lead. To that end, technical detail has been subordinated and though the endeavor has been made to portray modern practice, many of the older processes have received attention, either by reason of their intrinsic chemical interest, or as the forerunners of modern methods. For the same purpose, also, stress has been laid on the historical aspect of the subject and on the mutual relations of lead and its compounds in nature.

**MANUFACTURE OF NITRIC ACID AND NITRATES.**

By Allin Cottrell. Lond., 1923. (Purchase.)

**PRODUCTION OF LIQUID FUELS FROM OIL SHALE AND COAL IN AUSTRALIA.**

By R. E. Thwaites. (Institute of Science and Industry, Bulletin No. 24.) Melbourne, 1923. (Gift.)

**SYMPOSIUM DO PETROLEO MEXICANO.**

By A. F. Machado. Guimarães. Rio de Janeiro, 1923. (Gift.)

**DIE GASERZEUGER.**

By H. R. Trenkler. Berlin, Julius Springer, 1923. 378 pp., illus., diagrams, tab., 9 x 6 in., boards. \$3.50.

In spite of the previous writings on the gas producer, the author believes there is need for a new handbook, especially since the field for gas firing is always growing larger, and new designs of generators are always being introduced. The recovery of by-products has

also recently become important. The book covers the fuels, the chemical and technical principles of gasification, producer types, design of producer plants, purification of gas and by-product recovery, and operating methods. Practice is described carefully and the subject is reviewed critically throughout. Patent references are given in an appendix.

#### EXPERIMENTAL PRODUCTION OF STRAW GAS.

By Harry E. Roethe. (U. S. Dept. of Agriculture. Bulletin No. 1203.) 1923. (Gift.)

#### HISTORY AND PROGRESS OF METALLURGICAL SCIENCE

And Its Influence upon Modern Engineering. By Sir Robert A. Hadfield. Birmingham, England, 1923. (Gift.)

#### METALLURGY OF STEEL; VOL. 2, MECHANICAL TREATMENT.

By F. W. Harbord and J. W. Hall. Seventh Edition. Lond., Charles Griffin & Co., Phila., J. B. Lippincott Co., 1923. 553 pp., illus., diagrams, tab., 9 x 6 in., cloth. 32 shillings.

A welcome revision of the principal book on this subject in the English language. Treats of reheating furnaces and accessory apparatus, rolling, power, rolling mills for various products, forging, tube and wire making. This edition has been almost wholly rewritten. Numerous bibliographies are included.

#### MOVING LOADS BY INFLUENCE LINES AND OTHER METHODS.

By Ernest Headly Sprague. (Broadway Engineering Handbooks, Vol. 31.) N. Y., 1918. (Purchase.)

#### MANUFACTURE OF PULP AND PAPER FROM AUSTRALIAN WOODS.

By L. R. Benjamin. (Institute of Science and Industry, Bulletin No. 25.) Melbourne, 1923. (Gift.)

#### PULPWOOD AND WOOD PULP IN NORTH AMERICA.

By Royal S. Kellogg. N. Y., McGraw-Hill Book Co., 1923. 273 pp., illus., map, tab., 9 x 6 in., cloth. \$4.00.

This is a general survey of the wood pulp industry of to-day, written, it would seem, for those desiring a comprehensive view of the industry and its future, and of the economic factors involved. Part one, describes briefly the processes for making pulp and discusses the consumption of pulp. Part two, explains logging methods, grades of pulpwood and the consumption in North America. Part three, discusses the timber supply of the continent, and Part four, forestry methods.

#### BUILDING CODE OF THE CITY OF NEW YORK

Revised to May 1, 1922. (Gift.)

#### DETERIORATION OF STRUCTURES IN SEA-WATER.

Third Interim Report of the Committee of the Institution of Civil Engineers. Lond., 1923. (Purchase.)

#### HANDBOOK OF DESIGN CONTAINING TABLES, STANDARDS AND USEFUL INFORMATION

Appertaining to "Steelcrete" Mesch. Consolidated Expanded Metal Companies. 1923. (Gift.)

#### MARINE PRODUCTS OF COMMERCE.

By Donald K. Tressler and others. N. Y., Chemical Catalog Company, 1923. 762 pp., illus., tab., 9 x 6 in., cloth. \$9.00.

A comprehensive survey of our marine products and of the methods of obtaining and utilizing them. While the greater part of the book is concerned with the fishing industries, there are good accounts of the methods for manufacturing salt from sea water and recovering by-products from bittern and for obtaining iodine and potash from seaweeds. References to the important literature on each topic are given. The book attempts to cover both the scientific and the practical aspects of the subject. Special consideration is given to American practice.

#### CITY PLAN FOR SPRINGFIELD, MASS.

A Progress Report, May 1922. Compiled and edited by Technical Advisory Corporation. (Gift.)

**PITTSBURGH PLAN.**

Citizens Committee on City Plan of Pittsburgh. Report No. 3, Transit; Report No. 4 Parks. (Gift.)

**STRESSES IN FRAMED STRUCTURES.**

By George A. Hool and W. S. Kinne. "N. Y., McGraw-Hill Book Co., 1923. 620 pp., diagrams, tab., 9 x 6 in., cloth. \$5.00.

This book is one of a series of volumes on the design and construction of the principal kinds and types of modern structures, intended for use as college texts, for home study and for ready reference. The present work discusses the general theory of stresses in framed structures, and its application to the study of the stresses in roof trusses, bridge trusses and lateral trusses. Other sections examine the deflection of trusses, stresses in redundant members, secondary stresses, statically indeterminate frames, wind stresses in high buildings and stresses in rectangular towers. The text is the work of several experienced engineers.

**TECHNICAL WRITING.**

By T. A. Rickard. Second Edition. N. Y., John Wiley & Sons; Lond., Chapman & Hall, 1923. 337 pp., 8 x 5 in., cloth. \$2.00.

Contents: General Principles; Naturalness; Clearness; Precision; Superlatives and the Superfluous; It, One, Where, While, Since; The Subjunctive, Shall and Will, and the Possessive; Relative Pronouns; Prepositions and Preposition-Verbs; Hyphens and Compound Words; Slovenliness; Jargon; The Wrong Word; Construction; Punctuation; Composition; Style. Mr. Rickard's book will be useful to every engineer who desires to write clearly, correctly and pleasantly. He calls attention to many common faults in technical writing, illustrates them by many examples and shows how they might have been avoided. The advice given is practical and is based on lengthy editorial experience. The new edition has been corrected, and partly rewritten, and enlarged by two new chapters.

**UNIVERSAL DIRECTORY OF RAILWAY OFFICIALS.**

Lond., 1923. (Purchase.)

**MAKERS OF SCIENCE; MATHEMATICS, PHYSICS, ASTRONOMY.**

By Ivor B. Hart. Lond., Oxford University Press, 1923. 320 pp., illus., portraits, 8 x 5 in., cloth. \$2.75. (Gift of Oxford University Press. American Branch.)

This book is designed to give students of science an elementary account of the history of its development. The author has adopted the biographical method and presents his material through biographies of a series of individuals, from Aristotle to Kelvin, who have had an important influence on our knowledge of the sciences under consideration. These biographies are linked together, so that a connected history of some of the broader movements in scientific history is obtained.

BUILDING CODE OF THE CITY OF NEW YORK

Revised to May 1, 1923. (Gift.)

DETERIORATION OF STRUCTURES IN SEA-WATER.

Third Interim Report of the Committee of the Institution of Civil Engineers. (Purchase.)

HANDBOOK OF DESIGN CONTAINING TABLES, STANDARDS AND USEFUL INFORMATION.

Apparatus to "Standard" Mach. Consolidated Expanded Metal Co. (Gift.)

MARINE PRODUCTS OF COMMERCE.

By Donald K. Traylor and others. N. Y. Chemical Catalog Company, 1923. 783 pp., illus., tab., 9 x 6 in., cloth. \$9.00.

A comprehensive survey of our marine products and of the methods of obtaining and utilizing them. While the greater part of the book is concerned with the fishing industries, there are good accounts of the methods for manufacturing salt from sea water and recovering by-products from bituminous and for obtaining iodine and sodium from seaweeds. References to the important literature on each topic are given. The book attempts to cover both the scientific and the practical aspects of the subject. Special consideration is given to American practice.

CITY PLAN FOR SPRINGFIELD, MASS.

A Progress Report, May 1923. Compiled and edited by Technical Advisory Corporation. (Gift.)



# Current Civil Engineering Literature

## Key to Abbreviated References to Publications Indexed\*

Abbreviated References.	Publication.	Place.
Am. C. Inst.....	American Concrete Institute, Proceedings (Y.)	Detroit
A. I. E. E.....	American Institute of Electrical Engineers, Journal (M.)	New York
A. R. E. A.....	American Railway Engineering Association, Proceedings (Y.)	Chicago
A. S. T. M.....	American Society for Testing Materials, Proceedings (Y.)	Philadelphia
Am. Soc. C. E.....	American Society of Civil Engineers, Proceedings (M.)	New York
Am. Soc. Mun. Impvts..	American Society for Municipal Improvements, Proceedings (Y.)	New York
Am. W. W. Assoc.....	American Waterworks Association, Journal (BI-M.)	Baltimore
Am. Wood Pres. Assoc..	American Wood Preservers Association, Proceedings (Y.)	Chicago
Ann. P. et C.....	Annales des Ponts et Chaussées (BI-M.)	Paris
Ann. T. P. Belg.....	Annales des Travaux Publics de Belgique (BI-M.)	Brussels
Assoc. Ing. Gand.....	Annales de l'Association des Ingénieurs sortis des Ecoles Spéciales de Gand (Q.)	Ghent
Bost. Soc. C. E.....	Boston Society of Civil Engineers, Journal (M.)	Boston
Can. Engr.....	Canadian Engineer (W.)	Toronto
Cem. Eng.....	Cement and Engineering News (M.)	Chicago
Cornell C. E.....	Cornell Civil Engineer (M.)	Ithaca
Dock & Harbour.....	Dock and Harbour Authority (M.)	London
Eng.....	Engineering (W.)	London
Eng. & Contr.....	Engineering and Contracting (W.)	Chicago
Eng. Inst. Can.....	Engineering Institute of Canada, Journal (M.)	Montreal
Eng. N. R.....	Engineering News-Record (W.)	New York
Engrs. Soc. Pa.....	Engineers' Society of Pennsylvania, Journal (M.)	Harrisburg
Engrs. Soc. W. Pa.....	Engineers' Society of Western Pennsylvania, Journal (M.)	Pittsburgh
Engr.....	Engineer (W.)	London
Engrs. & Eng.....	Engineers and Engineering, Engineers' Club of Philadelphia (M.)	Philadelphia
Gen. Civ.....	Le Génie Civil (W.)	Paris
Gesund. Ing.....	Gesundheits Ingenieur (W.)	Munich
Inst. C. E.....	Institution of Civil Engineers Minutes of Proceedings (Q.)	London
Inst. Mun. & Co. Engrs..	Institution of Municipal and County Engineers, Journal (W.)	London
Int. Ry. Cong. Assoc...	International Railway Congress Association, Bulletin (M.)	Brussels
Land. Arch.....	Landscape Architecture (M.)	Harrisburg
Mech. Eng.....	Mechanical Engineering (M.) Journal of the American Society of Mechanical Engineers	New York
Mil. Engr.....	Military Engineer (M.)	Washington
Min. & Metal.....	Mining and Metallurgy (M.) American Institute of Mining Engineers	New York
Mun. & Co. Eng.....	Municipal and County Engineering (M.)	Indianapolis
N. E. W. W. Assoc.....	New England Water Works Association, Journal (M.)	Boston
N. Y. R. R. Club.....	New York Railroad Club, Proceedings (M.)	Brooklyn
Oest. Ing. Arch. Ver...	Oesterreichischer Ingenieur und Architekten Verein, Zeitschrift (F.)	Vienna
Power.....	Power (W.)	New York
Rev. Gen.....	Revue Générale des Chemins de Fer (M.)	Paris
Ry. Age.....	Railway Age (W.)	New York
Ry. Eng. & Main.....	Railway Engineering and Maintenance (M.)	Chicago
Ry. Rev.....	Railway Review (W.)	Chicago
Schw. Bauz.....	Schweizerische Bauzeitung (W.)	Zurich
Sci. Am.....	Scientific American (M.)	New York
Soc. Ing. Civ. Fr.....	Société des Ingénieurs Civils de France, Mémoires et Comptes Rendus (Q.)	Paris
Ver. deu. Ing.....	Verein deutscher Ingenieure, Zeitschrift (W.)	Berlin
West. Ry. Club.....	Western Railway Club, Proceedings (M.)	Chicago
West. Soc. Engrs.....	Western Society of Engineers, Journal (M.)	Chicago
Zeit. Bau.....	Zeitschrift für Bauwesen (Q.)	Berlin
Z. d. Bauer.....	Zentralblatt der Bauverwaltung (W.)	Berlin

\* Y = Yearly; Q = Quarterly; M = Monthly; F = Fortnightly; W = Weekly.

## B. Applied Mechanics

### a. Mechanics of Solids (Strength of Materials)

#### 1. Processes of Measurement

Theorie und Praxis der Kerbschlagprobe.\* (Theory and Practice of the Notched Impact Test.) Paul Fillunger. Schw. Bauz. Serial beginning Nov. 24, '23.

#### 2. Elastic Solids

Der durchlaufende Balken über vier Öffnungen mit biegeunfest verbundenen Mittelstütze.\* (The Continuous Girder Over Four Openings With Rigidly Connected Intermediate Supports.) Walter Nakonz. Z. d. Bauver. Oct. 31, '23.

#### 4. Riveted Systems

Current Structural Research at Bureau of Standards.\* Eng. N. R. Nov. 29, '23.  
Le calcul des pylônes haubanés.\* (Design of Guyed Towers.) Sainflou. Gen. Civ. Nov. 17, '23.

#### 5. Homogeneous Inelastic Solids

Current Structural Research at Bureau of Standards.\* Eng. N. R. Nov. 29, '23.

#### 7. Pulverulent Masses (Earth Pressure)

Street Retaining Wall Founded on Fill of Large Boulders.\* Harry W. Levy. Eng. N. R. Nov. 29, '23.

### b. Hydraulics

#### 3. Industrial Hydraulics

Concrete Helps in Pitt River Project.\* C. W. Geiger. Cem. & Eng. Dec., '23.

The Gibson Method and Apparatus for Measuring the Flow of Water in Closed Conduits.\* Norman R. Gibson. Mech. Eng. Dec., '23.

Waterwheel Construction and Governing. E. M. Breed. A. I. E. E. Dec., '23.

Système collecteur pour l'utilisation de l'eau de réservoirs d'altitudes différentes, sur les turbines d'une usine électrique.\* (Collector System for the Utilization of the Water from Reservoirs at Different Elevations on the Turbines of an Electric Plant.) Gen. Civ. Nov. 10, '23.

Wasserkraft und Kohle im Lichte unserer Handelsbilanz. (Water Power and Coal in the Light of Our Trade Balance.) Fr. Brock. Oest. Ing. Arch. Ver. Oct. 26, '23.

### c. Pneumatics

#### 3. Industrial Pneumatics

Die Windkraft in Deutschland.\* (Wind Power in Germany.) Oscar Walter. Ver. deu. Ing. Nov. 10, '23.

## C. Materials of Construction and General Processes

### a. Lime, Cement, Mortar, Concrete, Brick, Bitumen, Timber, Gravel, etc.

The Disintegration of Cement in Sea Water. Discussion: Charles A. Newhall, Eduardo de Castro, and R. Feret. Am. Soc. C. E. Dec., '23.

Concrete Aggregate Produced From Local Deposit.\* J. Arthur Garrod. Eng. N. R. Dec. 20, '23.

Versuche über den Einfluss von Frost auf Beton.\* (Experiments on the Action of Frost on Concrete.) Karl Haberkalt and Karl Naehr. Oest. Ing. Arch. Ver. Nov. 9, '23.

### b. Metals

Die Bruchgefahr bei mechanischer und bei elektrischer Beanspruchung fester Körper.\* (The Risk of Fracture in Mechanical and in Electrical Straining of Solid Bodies.) W. Kummer. Schw. Bauz. Nov. 17, '23.

### f. Rock Execution. Mining. Rock Removal

Abstracts of Institute Papers. Min. & Metal. Dec., '23.

Ueber das Druckstollenproblem, Entwicklung und gegenwärtiger Stand in Theorie und Praxis.\* (On the Pressure Tunnel Problem, Development and Present Situation in Theory and Practice.) Wilhelm Effenberger. Oest. Ing. Arch. Ver. Oct. 26, '23.

Geologische Bemerkungen zum Druckstollenproblem.\* (Geological Observations on the Pressure Tunnel Problem.) Otto Ampferer. Oest. Ing. Arch. Ver. Oct. 26, '23.

### g. Execution of Works. Specifications

#### 2. Of Concrete

Construction of Outdoor Swimming Pool at Cedar Rapids, Iowa.\* Howard R. Green. Mun. & Co. Eng. Nov., '23.

Effect of Excess Water on Concrete.\* (From Concrete Data for Engineers and Architects.) Can. Engr. Dec. 4, '23.

Self-Supporting Reinforcement for Concrete Floor.\* Eng. N. R. Dec. 6, '23.

Mode de compensation du retrait dans les voutes en beton.\* (Mode of Compensating for Contraction in Concrete Arches.) Gen. Civ. Dec. 1, '23.

### j. Piles and Pile Driving

Deep Water Pile Driving for Seattle Bridge Piers.\* Eng. N. R. Dec. 20, '23.

### k. Tunnels and Tunneling-Shields

Colorado's Six-Mile Tunnel Under the Rockies.\* Theodore Merrill Fisher. Sci. Am. Dec., '23.

The World's Largest Subaqueous Tunnel.\* Sci. Am. Dec., '23.

Concrete Tunnel Protects Pipe Lines.\* Cem. & Eng. Dec., '23.

Six-Mile Moffat Tunnel Through the Rocky Mountains.\* Eng. N. R. Dec. 13, '23.

**D. Highways****c. Construction**

- Modern Construction of Brick Pavements. Will P. Blair. Mun. & Co. Eng. Nov., '23.  
 Reconstruction of Foundations of, and Carpets on, Existing Roads.\* W. P. Robinson. Inst. Mun. & Co. Eng. Dec., '23.  
 Bates Test Road. Ralph R. Benedict. Engrs. Soc. W. Pa. Dec., '23.  
 Highway Officials Review Technical Activities of 1923. (From papers read before Am. Assoc. of State Highway Officials.) Eng. N. R. Dec. 13, '23.  
 Simple Balancing of Quantities in Highway Grading.\* Fred M. Garnett. Eng. N. R. Dec. 20, '23.  
 Bombement à donner aux revêtements dits "Modernes" des chaussées. Desideratum formulé par les usagers et observations auxquelles il donne lieu.\* Crowning to be given to so-called "Modern" Surfaces of Roads.) Leon Moissenet. Gen. Civ. Dec. 1, '23.

**d. Maintenance**

- Resurfacing Paved Streets. D. I. Elder. (Paper read before League of Iowa Municipalities.) Mun. & Co. Eng. Nov., '23.  
 Importance of Adequate Street Drainage.\* Harlan H. Edwards. Mun. & Co. Eng. Nov., '23.  
 Gravel Road Maintenance in Michigan. B. C. Tiney. (Paper read before Michigan State Good Roads Assoc.) Mun. & Co. Eng. Nov., '23.  
 Recording Road Maintenance Costs by Gantt Charts.\* H. J. Friedman. Eng. N. R. Nov. 29, '23.  
 How Chicago's Asphalt Pavements Were Examined. Paul E. Green. Eng. N. R. Dec. 13, '23.  
 Protecting Highway Bridges from Colliding Vehicles.\* E. F. Kelley. Eng. N. R. Nov. 29, '23.

**E. Bridges, Viaducts, and Arches****b. Iron or Steel Bridges and Viaducts**

- Tentative Specifications for Steel Highway Bridge Superstructure. Discussion: S. H. Leister, Theodore Belzner, L. H. Shoemaker, and Adolf Eggenschwyler. Am. Soc. C. E., Dec., '23.

**d. Concrete and Reinforced Concrete Bridges and Viaducts**

- Two Reinforced-Concrete Bridges in France.\* W. L. Scott. Eng. N. R. Dec. 6, '23.  
 Bronx Parkway Bridges Tested by Heavy Loads.\* Arthur G. Hayden. Eng. N. R. Dec. 6, '23.  
 Pont-rails en arc et en béton armé, sur la Sambre, près de Charleroi (Belgique).\* (Arched Railroad Bridge of Reinforced Concrete Over the Sambre near Charleroi, Belgium.) Gen. Civ. Nov. 24, '23.  
 Le nouveau pont en béton armé, sur la Seine, à Saint-Pierre du Vauvray (Eure).\* (The New Reinforced Concrete Bridge over the Seine at Saint-Pierre du Vauvray, Eure.) Gen. Civ. Nov. 3, '23.

**h. Computations, Tests, etc.**

- Reactions for a Particular Type of Unsymmetrical Arch.\* Discussion: Victor H. Cochrané and J. Charles Rathbun. Am. Soc. C. E. Dec., '23.  
 General Construction of Bridges.\* J. F. Hawkins. Inst. Mun. & Co. Engrs. Dec. 4, '23.  
 Methods of Strengthening Old Bridges.\* Lewis E. Moore. Can. Engr. Dec. 11, '23.  
 Note sur le calcul rapide des arcs paraboliques.\* (Note on the Rapid Calculation of Parabolic Arches.) M. G. Dozoul. Soc. Ing. Civ. Fr. July, '23.

**x. Miscellaneous**

- Protecting Highway Bridges from Colliding Vehicles.\* E. F. Kelley. Eng. N. R. Nov. 29, '23.

**F. Inland Waters****a. Natural Waterways (General Articles)**

- The Revival of Commercial Transportation on the Mississippi. M. J. Sanders. Am. Soc. C. E. Dec., '23.  
 Discussion on the River and Harbor Problems of the Lower Mississippi.\* Lewis Muhlenberg Haupt, C. E. Grunsky, and William T. Lyle. Am. Soc. C. E. Dec., '23.

**c. Regulation of Waterways—Volume of Discharge, Freshets, Floods, Soundings**

- Flood Flows or Maximum Runoffs of Montana Streams.\* George Henry Ellis. Eng. N. R. Dec. 20, '23.  
 Projet de régularisation de la Haute-Seine, par dérivations du fleuve et de ses affluents dans des barrages-réservoirs.\* (Plan for Regulation of the Upper Seine, by Diversion of the River and of Its Tributaries into Storage Reservoirs.) Gen. Civ. Nov. 17, '23.

**d. Diverting Dams**

- L'écluse de Brondolo, sur le canal de Venise au Pô.\* (The Brondolo Lock on the Canal from Venice to the Po.) Gen. Civ. Nov. 24, '23.  
 Barrages-réservoirs en terre contre les crues, pour la protection de Dayton (E.-U.).\* (Earth-Dam Reservoirs for the Flood Protection of Dayton, U. S. A.) Degove. Gen. Civ. Nov. 10, '23.

### k. Utilization of Inland Waterways, Freight, Capacity

- Present Status of Welland Ship Canal.\* Can. Engr. Nov. 20, '23.  
 Umschlaganlagen an Binnenwasserstrassen für Kraftwagenverkehr.\* (Transshipping Plants on Inland Waterways for Motor Truck Traffic.) Prietz. Z. d. Bauver. Oct. 31, '23.  
 Die Entwicklung der Rheinschiffahrt nach Basel.\* (The Development of Rhine Navigation to Basle.) L. Grosehupf. Schw. Bauz. Nov. 10, '23.

### G. Maritime Works

#### d. Roads and Outer Harbors. Dikes and Jetties. Breakwaters

- New Jetty and Equipment, Fresh Wharf, London Bridge.\* Eng. Dec. 7, '23.

#### h. Wharves, Mooring Buoys, Harbor Equipment

- Temporary Dams Employed in the Execution of Dock and Harbour Works.\* M. Du-Plat-Taylor. Dock & Harbour Dec., '23.

#### i. Harbors (General Articles)

- The Port of Fiume and Its Facilities.\* Dock & Harbour Dec., '23.  
 The Port of New Orleans: The Ocean Gateway of the Mississippi Valley.\* R. K. Smith. Dock & Harbour Dec., '23.

### H. Railroads. Street and Interurban Railways. Automobiles. Aeronautics

#### a. Railroads

##### 1. General Articles

- The Railways' Part in the Development of Hampton Roads.\* Charles S. Churchill. Am. Soc. C. E. Dec., '23.

##### 4. Track

- Laying 100-lb. Rail Under Traffic at Rate of a Mile an Hour.\* Ry. Eng. & Main. Dec., '23.  
 Laying a Mile of Rail Per Hour Under Traffic.\* Ry. Age Dec. 8, '23.

##### 5. Signals and Safety Apparatus

- Economic Value of Remote Operation of Switches.\* (From comm. report read before Signal Section, Am. Ry. Assoc.) Ry. Rev. Nov. 24, '23.

- Automatic Train Control Installation Completed.\* Ry. Rev. Dec. 22, '23.

- Rock Island Places Train Control in Service.\* Ry. Age Dec. 22, '23.

##### 6. Rolling Stock (Locomotives, Cars)

- Fundamentals of Fuel Economy.\* W. L. Richards. Ry. Age Dec. 1, '23.

- Canadian Pacific Standard 4-6-2 Locomotive. Ry. Age Dec. 15, '23.

- Utilisation des bois coloniaux dans le matériel roulant des chemins de fer.\* (Utilization of Colonial Woods in Railroad Rolling Stock.) L. Tolmer. Rev. Gen. Nov., '23.

##### 7. Use of Electricity

- Speed Tests of New Electric Locomotives.\* Ry. Rev. Dec. 8, '23.

- Note sur la première étape du programme d'électrification partielle du Réseau P.-L.-M.\* (Note on the First Step in the Program for the Partial Electrification of the P. L. M. System.) Marcel Japlot. Rev. Gen. Nov., '23.

- L'électrification de la ligne Rome-Tivoli, en courant triphasé à 10 000 volts et à la fréquence 45.\* (Electrification of the Rome-Tivoli Line, with Three-Phase Current at 10 000 Volts and a Frequency of 45.) Gen. Civ. Nov. 24, '23.

##### 8. Stations, Engine Houses, Shops, Terminals

- A Study in L. C. L. Freight Terminal Service.\* Ry. Rev. Nov. 24, '23.

- Burlington Builds 9 000 000-Gal. Reservoir.\* Ry. Eng. & Main. Dec., '23.

- Michigan Central Completes Its Niles, Mich., Yard.\* Ry. Rev. Dec. 1, '23.

- British Methods in British Passenger Car Building.\* D. R. Lamb. Ry. Rev. Dec. 1, '23.

- Chicago Union Station Forms Double-End Terminal.\* Eng. N. R. Dec. 6, '23.

- Zum Bahnhof-Vorplatz und Aufnahmegebäude der neuen Station Zürich-Enge.\* (On the Station Approach and Building of the New Zurich-Enge Station.) Schw. Bauz. Nov. 10, '23.

##### 9. Technical and Commercial Use

- A Method of Calculating a Fair Rate for the Transportation of Western Coal.\* M. J. Butler. Eng. Inst. Can. Dec., '23.

#### b. Special Railroads

##### 2. Aerial Railroads

- Les porteurs aériens à câbles. Calcul des sections des câbles porteurs et tracteurs. Essais des fils entrant dans leur composition.\* (Aerial Cableways. Design of the Carrying and Traction Ropes. Tests of the Wire Used in Their Construction.) F. Gretin and J. Selgie. Gen. Civ. Serial beginning Nov. 24, '23.

##### x. Miscellaneous

- Moving Platforms, an Untried Form of Rapid Transit.\* Eng. N. R. Dec. 6, '23.

- Le XVIII e Salon de l'Automobile. Section des véhicules industriels (24 octobre-2 novembre 1923).\* (The 18th Automobile Salon. Industrial Vehicle Section, October 24-November 2, 1923.) G. Delanghe. Gen. Civ. Nov. 17, '23.

- Les suspensions d'automobiles, système Brouhiet. Le "stab" et la "frein de centre".\* (The Brouhiet System Automobile Suspensions. The "stab" and the "center brake"). G. Delanghe. Gen. Civ. Nov. 24, '23.



## f. Aeronautics

## 1. General Articles

- The Aeroplane in Engineering.\* Louis D. Huntoon. Min. & Metal. Dec., '23.  
Les navires porteurs d'avions.\* (Airplane Carrier Ships.) Gen. Civ. Nov. 24, '23.

## 3. Aeroplanes

- De l'éclairage des avions pendant la nuit à l'aide d'un faisceau de projecteur électrique.\*  
(Lighting Airplanes during the Night with the Aid of the Beam of an Electric Projector.)  
Jean Rey. Soc. Ing. Civ. Fr. July, '23.

## I. Municipal Water-Works. Agricultural Engineering

## a. General Articles

- Future Water Supply for the City of Philadelphia.\* Frank H. Caven. Engrs. & Eng. Dec., '23.

## b. Hydrology. Water Resources

- Periodic Fluctuations of Rainfall in Hawaii.\* C. E. Grunsky. Am. Soc. C. E. Dec., '23.

## c. Dams and Reservoirs

- The Hydraulic Design of the Shaft Spillway for the Davis Bridge Dam, and Hydraulic Tests on Working Models.\* Ford Kurtz. Am. Soc. C. E. Dec., '23.  
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- Control of Stream Pollution. Charles F. Dalton. (From Comm. report read before Conference of State and Provincial Health Authorities.) Mun. & Co. Eng. Nov., '23.  
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## e. Distribution of Water

- A Simple Method of Determining Pump Slippage.\* J. F. Pierce. Eng. & Contr. Dec. 12, '23.

## J. Sewerage. Sewage and Refuse Disposal

## a. Sewers and Drains

- Muddy Run Trunk Sewer, Niagara Falls, Ont.\* E. M. Proctor. Can. Engr. Dec. 11, '23.

## b. Sewage Disposal. Purification

- Hot Water Supply from Sludge. A. J. Martin. (Paper read before Royal Sanitary Inst.) Can. Engr. Nov. 27, '23.  
Sludge Disposal.\* John Haworth. Inst. Mun. & Co. Engrs. Nov. 20, '23.  
Sludge Digestion. John D. Watson. Inst. Mun. & Co. Engrs. Nov. 20, '23.  
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- Refuse Disposal Situation in Europe. George W. Fuller. (Paper read before Am. Public Health Assoc.) Can. Engr. Dec. 4, '23.  
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## x. Miscellaneous

- English Practice in Sanitary Engineering. H. C. H. Shenton. (Paper read before Inst. Sanitary Engrs.) Can. Engr. Nov. 20, '23.

## K. Heat Engines

## b. Steam Turbines

- The Use of Mercury in Binary Fluid Turbines.\* William J. Kearton. (Paper read before Inst. of Mech. Engrs.) Eng. Serial beginning Nov. 23, '23.

**c. Gas and Oil Engines**

Diesel Engines for Water-Pumping Plants.\* A. R. McMullen. Power Dec. 18, '23.

**L. Electricity****b. Distribution and Transmission of Electricity****1. Power Plants**

The Margins of Possible Improvement in the Central-Station Steam Plant.\* Ernest L.

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**c. Electric Lighting**

1. Arc, Incandescent, Mercury Vapor, Neon Lamps, etc.

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**e. Electro-chemistry and Electrometallurgy**

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**f. Signals and Communication**

The Economic Development of a Step-by-Step Automatic Telephone Equipment.\* Paul G. Andres. A. I. E. E. Dec. '23.

Some Experiences with a 202-Mile Carrier-Current Telephone. E. A. Crellin. A. I. E. E. Dec., '23.

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**M. Architecture****a. Educational, Government and Scientific Buildings**

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Rochester Compares Three Types of School Buildings.\* A. R. Reilly. Eng. N. R. Nov. 29, '23.

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**N. Landscape Engineering. City Planning**

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**O. Administration. Legislation. Economics. Statistics****b. Economic Questions of a General Character. Valuations**

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**d. Administrative and Financial Management of Means of Communication****2. Routes and Roads**

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**3. Inland Navigation**

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**g. Engineering Education**

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